

**RMT**



EPA Region 5 Records Ctr.



314041

September 19, 2008

Mr. Sam Chummar  
Remedial Project Manager  
U.S. Environmental Protection Agency - Region 5  
77 W. Jackson Blvd. SR-6  
Chicago, IL 60604

Subject: Final Phase 2 Work Plan for the Plainwell Mill RI/FS Addendum No. 1  
Operable Unit No. 7 of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site  
Plainwell, Michigan

Dear Sam:

On behalf of Weyerhaeuser Company (Weyerhaeuser), RMT, Inc. (RMT), is submitting this Final Work Plan for Phase 2 of the Mill Banks investigation activities. This final Work Plan is the second part of an addendum to the September 2006 draft Remedial Investigation/Feasibility Study (RI/FS) Work Plan for the Plainwell Mill site, located at 200 Allegan Street, in Plainwell, Michigan. The addendum is being completed in a phased manner to specifically address the United States Environmental Protection Agency's (USEPA) concerns regarding the oil impacted soil and elevated PCB concentrations cited in your February 18, 2008, letter. This Final Work Plan incorporates the comment letters received from USEPA on July 31, 2008, and September 9, 2008.

Thank you in advance for your assistance.

Sincerely,

RMT, Inc.

Nathan C. Weber  
Project Engineer

cmk/enclosure

cc: Paul Bucholtz, Michigan Department of Environmental Quality  
Jennifer Hale, Weyerhaeuser Company  
John Gross, Weyerhaeuser Company  
Martin Lebo, Weyerhaeuser Company  
Kathryn Huibregtse, RMT, Inc.  
Jim Hutchens, RMT, Inc.  
Michael Erickson, ARCADIS



## **Phase 2 Addendum No. 1 Remedial Investigation/Feasibility Study Work Plan**

**Weyerhaeuser Company  
Plainwell Mill  
Plainwell, Michigan**

*Operable Unit No. 7 of the Allied Paper, Inc./  
Portage Creek/Kalamazoo River Superfund Site*

**September 2008**

*RMT, Inc. | Weyerhaeuser Company  
Final*

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# Section 1

## Introduction

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On behalf of Weyerhaeuser Company (Weyerhaeuser), RMT, Inc. (RMT), is submitting this focused Work Plan for Phase 2 of the Mill Banks investigation activities. This Work Plan is the second part of an addendum to the September 2006 draft Remedial Investigation/Feasibility Study (RI/FS) Work Plan for the Plainwell Mill site, located at 200 Allegan Street, in Plainwell, Michigan. The Plainwell Mill has been identified as Operable Unit 07 of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund site. The first phase of the requested Mill Bank investigation activities was described in a Work Plan for Mill Banks RI/FS Addendum #1, entitled PCB Investigation Activities Near Mill Building Banks. The initial Work Plan for Phase 1: Definition of Site Conditions, was submitted to United States Environmental Protection Agency (USEPA) on March 4, 2008, and approved in a letter dated April 8, 2008. The approved scope included review of supplemental historical information for the site, a geophysical survey, and preparation of this Phase 2 Work Plan that summarizes the Phase 1 results and describes the investigation activities.

Additional work along the former Plainwell Mill banks was requested in response to discovery of elevated concentrations of polychlorinated biphenyls (PCBs) and oily soil encountered along the Plainwell Mill banks during the separate Plainwell Mill Banks Emergency Response activities. These discoveries prompted several responses including a USEPA letter to Weyerhaeuser dated February 19, 2008, that requested additional information to be gathered along the Mill banks to determine the following:

1. the cause of the oily sheen observed during the late January excavation, including consideration of whether a non-aqueous phase liquid (NAPL) was the cause;
2. whether NAPL is the cause of high PCB concentration at sample locations: PM-SD-041, PEX-1, and PEX-2; and
3. whether NAPL, if present, could be entering into the Kalamazoo River.

USEPA's request for information was refined into the following objectives in the approved Mill Banks Addendum #1:

1. **Identify Source:** Identify, as much as possible, a likely cause of the oily sheen observed near the former transformer pad, with focus on the possible presence of NAPL.
2. **Determine Relationships:** Determine if there is a relationship between the oily material near the transformer pad and the elevated PCB concentrations found at PM-SD-041, PEX-1, and PEX-2 (Figure 2).
3. **Assess NAPL:** Determine whether NAPL, if present, is entering the Kalamazoo River.

4. **Define Nature of Contamination:** Determine if the oily material present in soils and fill near the transformer pad and at locations PM-SD-041, PEX-1, and PEX-2 contain petroleum products and/or PCBs.
5. **Develop Next Steps:** Determine immediate actions needed and how the next phase of investigation should be integrated with other RI activities.

These objectives continue to create the framework for the Phase 2 field activities. The supplemental historical information and geophysical data collected during Phase 1 have been synthesized into a preliminary conceptual site model to help identify possible site conditions along the river banks near the Mill buildings (Sections 2 and 3). These findings then provide the basis for the focused Phase 2 investigation plan included in Section 5 of this Work Plan.

## Section 2

# Review of Supplemental Historical Information

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### 2.1 Overview

As described in the Phase I Work Plan, various sources of information were reviewed with focus on PCBs and petroleum usage and consideration of site conditions that could impact migration pathways. Specific areas of concern were activities along the banks themselves (storage buildings and pads), process activities and sewer lines from the manufacturing operations in the adjacent buildings, and the condition and possible changes in bank configuration with different water elevations in the Plainwell impoundment and expanding plant activities. Specific information sources reviewed include:

- Sanborn fire insurance maps;
- previously collected on-site environmental data for PCBs and petroleum products;
- supplemental information on the former Consumer's Power substation located near the confluence of the Mill Race and the original channel of the Kalamazoo River;
- locally available aerial photograph files at the U.S. Department of Agriculture office in Allegan, Michigan;
- on-site building drawings and plan sets related to sewer lines and outfalls, foundation design, and other subsurface features; and
- historical data archived in the Ransom Public Library in Plainwell, Michigan.

### 2.2 Sanborn Maps

Sanborn or fire insurance maps can provide considerable information regarding building layouts and shoreline features. Sanborn maps dated 1884, 1892, 1899, 1904, 1911, 1918, 1928, 1942, and 1950 exist and provide coverage of the Plainwell Mill (these maps are included in Appendix A).

Based upon review of these maps, a number of changes occurred to the Mill buildings between 1884 and 1911 along the river bank in front of the Mill buildings. In 1884, there existed a secondary mill race for power generation or Mill operations that would have been located on the far eastern portion of the river bank. Various additional channels passing underneath the Mill buildings and exiting along the bank continued to exist through 1911 (not present in 1918). These former channels were filled before 1918 and the source and size of the fill material is currently unknown.

In addition, the Sanborn map from 1928 is the first map to include the clear outline of a small structure located adjacent to the river bank in front of the Mill buildings. The structure is still present in the 1950 Sanborn map, which is the last map available for review on this site.

## 2.3 Previous Data Along Mill Buildings

A review of previously collected analytical data is another important consideration when trying to determine the current site conditions and the potential relationship present between the oil impacted soil and elevated PCB concentrations. The main body of data collected to date is associated with various Phase II investigations completed for property transactions and study documentation for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund site. The draft Plainwell Mill RI/FS Work Plan presented a summary of the work completed before September 2006. The most recent Phase II Environmental Site Assessment (ESA) for the property was conducted for the city and completed in October 2006. Table 1 includes a summary of the total number of borings and temporary monitoring wells installed near the riverbank area adjacent to the Mill buildings. Appendix B to this Work Plan includes separate summary tables for groundwater and soil data collected to date. Comparison of the existing Phase II ESA data, depicted on Figure 1 and Appendix C – Historical Data Tables, to the applicable Part 201 criteria provides a context for evaluating the concentrations of potential COCs at the site.

**Table 1**  
**Summary of Previous Monitoring Well and Soil Boring Information**  
**Adjacent to the Mill Buildings and Riverbank**

Investigation Name and Date	Monitoring Wells		Soil Borings/ Samples		Summary of Results
	Number	Analysis	Number	Analysis	
RMT Plainwell Mill Banks Emergency Action 2007-2008	-	-	12	PCBs	Along the bank in front of the Plainwell Mill buildings, concentrations of PCBs in the 12 samples ranged from <1 to 513 ppm with six samples containing less than 4 ppm total PCBs. The majority of the PCB containing paper residuals were removed. Approximately 200 feet of banks with PCB concentrations above residential criteria were securely contained. (Appendix B – Clay and Armor Construction)
Fischbeck, Thompson, Carr Phase II – 2006	2	PAHs, VOCs, eight metals	-	-	According to the Phase II discussion, concentrations of some metals in groundwater exceeded the Part 201 comparison criteria.
CDM Gray Seam Investigation – 2001	-	-	1	PCBs	PCBs in shallow soil samples below residential criteria prior to bank removal activities.
ERM Phase II – 1997	5	PAHs, VOCs, metals	1	PAHs VOCs, and Lead	Only cadmium concentrations in groundwater exceeded comparison criteria. Soil samples did not exceed criteria.
BBL – 1996	-	-	2	PCBs	PCBs in shallow soil samples below residential criteria.

Investigation Name and Date	Monitoring Wells		Soil Borings/ Samples		Summary of Results
	Number	Analysis	Number	Analysis	
BBL- 1996 Manhole & Former Wastewater Discharge Pipe	-	-	2	PCBs and PCDD/PCDFs	A sample was collected from a storm sewer manhole and former wastewater pipe. Results indicated concentrations of 3.9 – 240 mg/kg total PCBs, respectively. The sediment was removed from both and the wastewater pipe was capped with concrete at both ends.

## 2.4 Historic Oil/Petroleum Releases/Tank Locations

### 2.4.1 Petroleum Products

Both petroleum products and PCB containing materials are documented to have been present on the Plainwell Mill property in the draft Plainwell Mill RI/FS Work Plan. Petroleum products were used at the Plainwell Mill as fuels and lubricants when the facility was operating. In the vicinity of the Mill buildings, the only reported release was from the 200,000-gallon above ground tank (AST) containing No. 6 fuel oil. The location of the No. 6 fuel release occurred a minimum of 400 feet from either the oil impacted soil along the banks or the elevated PCB concentrations. Furthermore, there is no known migration pathway from the AST to the Mill banks. The physical characteristics of No. 6 fuel inhibit the potential to cause an impact at these locations due to the elevated pour point of No. 6 fuel oil. The pour point for No. 6 fuel oil is between 43 and 59°F making it highly viscous at ambient temperatures and usually requires heating to temperatures of at least 100°F for the material to be pumped.

(<http://www.pumpschool.com/applications/fueloil.htm>)

In contrast, there were no reported releases from the 300-gallon gasoline underground storage tank (UST) and the 10,000-gallon kerosene tank located along the Mill buildings. According to site contacts and interviews (RMT, 1996), both tanks appeared to be in good condition after removal. However, these tanks were considered recognized environmental conditions and investigated during two separate Phase II ESAs.

**1997 Phase II ESA (1997, ERM):** A soil boring was advanced in the location of the former 300-gallon gasoline UST and a temporary monitoring well was installed. Soil samples were collected and analyzed for VOCs, PAHs, and lead from the 0 to 4 foot and 4 to 8 foot intervals with the results presented in Table 2. As a frame of reference, Michigan Part 201 values are included in the table and Appendix C – Historical Data Tables. Concentrations of various PAHs and VOCs were detected at levels less than 1 mg/kg. Lead was detected at 200 mg/kg from 0 to 4 feet and 4.1 mg/kg from 408 feet below ground surface (bgs). The water sample collected

from this location indicated non detectable concentrations of VOCs and PAHs. According to the ERM report, the groundwater in this location also contained only one detected metal (Chromium) at a concentration of 0.014 mg/L.

**Table 2**  
**Summary of Soil Data from 300-Gallon UST 1997 Phase II ESA**

Potential Constituents of Concern		SBG-1A/B (0-4 Feet) (mg/kg)	SBG-1C/D (4-8 Feet) (mg/kg)	Lowest Part 201 Criteria (mg/kg)
VOCs	Toluene	<0.0050	0.0053	2.8
PAHs	Anthracene	0.052	0.00082	41
	Benzo(a)anthracene	0.230	0.0016	20
	Benzo(a)pyrene	0.300	0.0024	2
	Benzo(b)fluoranthene	0.240	0.0031	20
	Benzo(g,h,i)perylene	0.590	<0.0022	2500
	Benzo(k)fluoranthene	0.140	<0.00055	200
	Chrysene	0.480	0.0031	2000
	Dibenzo(a,h)anthracene	0.073	0.0036	2
	Phenanthrene	0.370	0.0095	5.3
	Pyrene	0.500	<0.022	480
Metals	Lead	200	4.1	400

The 1997 ERM Phase II investigation also reported groundwater from four separate borings. These borings were advanced near the 300-gallon gasoline UST and 10,000-gallon UST with samples analyzed for VOCs, PAHs, and metals. A comparison of the Phase II results from the four groundwater samples indicated that only cadmium was detected above any potentially applicable Part 201 Criteria (Figure 1). A comparison of the analytical results from the four Phase II groundwater samples to the applicable Part 201 criteria is provided in Appendix C – Historical Data Tables.

**2006 Phase II ESA (FTCH, 2006):** An investigation of the 10,000-gallon kerosene UST included installation of two temporary down gradient monitoring wells. Groundwater samples were analyzed for VOCs, PAHs, and metals. A comparison of the FTCH groundwater results to the Part 201 Standards is provided in Appendix C – Historical Data Tables.

Finally, no releases have been reported from two separate 250-gallon diesel ASTs that were historically located in the general area of interest between the Mill buildings and the river (Figure 1). The gasoline AST was contained in a concrete-lined berm and the diesel AST was

stored on either concrete or asphalt pads; limiting the potential for a release to the environment from these two sources.

#### **2.4.2 PCB Containing Materials**

The use of PCBs has been well documented on site and has been detected along the Plainwell Mill banks during several independent investigations. In general, PCBs were present on site as an inadvertent contaminant in the recycled paper wastes, in various electrical equipment present on site, and lubricants used in the Mill buildings. No additional information was found to indicate other releases have occurred on site and data collected prior to the Plainwell Mill Banks Emergency Action showed no impacts of PCBs remaining on site.

Regarding the former transformer station located near the area of oil impacted soil, RMT has contacted Consumers Power to determine if any historical information is available relating to the construction of the transformer or any historical PCB results. Consumers Power has indicated that they will provide historical PCB results, but a timeline to receive this information is currently unknown.

### **2.5 Historical Aerial Photographs**

The historical aerials readily available that covered the Plainwell Mill included 1938, 1950, 1955, 1960, 1967, 1974, 1980, and 1991. These aerials were all reviewed in detail for visible buildings or site activities that may have had an impact upon the banks of the Plainwell Mill near the Mill buildings. Of particular interest was evidence of any filling activities along the bank, significant changes in the bank configuration, and any presence of a transformer station. In general, the aerials provide good information regarding larger objects and features along the bank, but do not provide sufficient resolution to see smaller site features and details. A brief summary for each aerial is provided below, copies of the historical aerials that were available in a digital format are presented in Appendix C (1955 to 1991).

- 1938 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. From the historical aerial, there is no visible transformer.
- 1950 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. From the historical aerial, there is no visible transformer.
- 1955 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. A rectangular shed is present along the river just west of the former transformer station. From the historical aerial, there does appear to be some activity in the vicinity of the former transformer station. The transformer station may be present at this time.
- 1960 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. A rectangular shed is present along the river just west of the former transformer station. From the historical aerial, it is unclear if the transformer station is present.
- 1967 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. A rectangular shed is present along the river just west of the former transformer station. In

addition, there is a small circular shape located at the northwest corner of the shed. The transformer station is present at this time.

- 1974 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. The rectangular shed along the bank is no longer present. The transformer station is present at this time.
- 1980 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. There does appear to be some erosion near the west end of the Mill buildings. The transformer station is present at this time. There are four rectangle shapes located on the middle to western portion of the Mill buildings. These rectangles may be semi-trailers.
- 1991 – The physical distance from the Mill buildings to the Kalamazoo River is generally equivalent to today. The transformer station is present at this time.

In summary, the historical aerials indicated that the bank configuration has changed very little between 1938 and 2008 and no specific filling activities could be observed. Another applicable feature is a storage shed located along the eastern portion of the Mill banks that was present in aerials from 1955 through 1967. This timeline is consistent with that obtained from the Sanborn maps (1928 through last Sanborn available dated 1950). Finally, the historical aerial photographs suggest that the transformer station may have been located on the eastern portion of the Mill banks as early as 1955.

## **2.6 Summary of Mill Building Information and Outfalls**

Current or former outfalls associated with historic process discharges along the Plainwell Mill could be potential migration pathways from the mill site to the river as material migrates along the pipe bedding or permeable backfill. Thus, identifying the source and location of these outfalls was completed during the Phase I Addendum to help define possible preferential migration pathways.

Currently, six outfalls are located and visible along the Plainwell Mill in the area of interest (Figure 2). Due to the changes at the Mill regarding building additions and process layouts, a review of available building drawings was conducted to determine if other outfalls were historically present along the Mill Bank. As property owners of the former Mill property, the City of Plainwell was able to retain a number of the facility engineering drawings relating to the Plainwell Mill operations. These drawings were available for review as part of the Phase I activities. Specifically, two sewer maps clearly illustrated additional outfall locations. A review of these two drawings (Appendix C) indicates that there may have been up to three additional outfalls associated with Mill operations (Figure 2). Based upon past permit applications, (1989 to 2000) available operational reports and drawings, (1950 to 1979) a summary of all present and historic outfalls locations and their suspected water sources are presented in Table 3.



**Table 3**  
**Present Outfalls and Description**

Outfall	Clearly Visible Outfall	Year and Outfall Description from Various Historic Sources
Outfall 001	Yes	(1950) No normal waste flow (1968) Non-contact cooling water (1973) Storm water (1975 to 2000) Unknown
SW-4	Yes	Suspected Storm water or roof drainage
Outfall 007	Yes	(2000) Non-contaminated discharge for fire protection testing from fire protection water well No. 1
Outfall 002	No – Location Interpolated from Historic Mill Drawing	(1950) Waste from the finishing room during clean-up periods (1968 to 1973) Non-contact cooling water (1975 to 1976) Non-contact cooling water, floor, and roof drains
SW-6 (Outfall 003)	Yes	(1950) Part of waste from No. 3 and No. 4 paper machines and from No. 2 paper machine, after passing through save-all; some city storm water (1968) Non-contact cooling water (1973) Clear water from boiler house (1975-1976) Non-contact cooling water, floor, and roof drainage
Outfall 004a	No – Location Interpolated from Historic Mill Drawing	(1950) All deinking wastes and some wastes from paper machine No. 3 and No. 4 (1968) Former emergency overflow from wastewater sump pit
Outfall 004 b (Possible Abandonment Location)	No – Location Estimated from Concrete Present at Surface	(1973) Non-contact cooling water (1975 to 1976) Non-contact cooling water, boiler drainage, and floor drainage (1979) Non-contact cooling water, compressor cooling water, and floor drainage (1994 to 1996) Approximately 0.15 cubic yards of PCB-containing sediment were removed in 1995 (BBL, 1996). Both ends of the pipe were plugged with cement.
Outfall Near Pump House	No – Location Interpolated from Historic Mill Drawing	Collected sewer water from Stock House, Beater Room. Potentially associated with emergency overflow for sump pump.
Unidentified Outfall	No – Location Obtained Prior to Mill Bank Emergency Action	No additional information was obtained
SW-7	Yes	Storm sewers and roof drainage -- Visible at northwestern corner of Mill buildings
SW-8	Yes	Storm sewer originating from Allegan Street

Data Sources:

1. Various Michigan Water Resource Commission Surveys (1950 to 1979)
2. Plainwell Draft NPDES Permits and Permit Applications (1989 to 2000)

The historical review also discovered a set of photographs from an earlier MDEQ report (1970s time frame) with photographs of the Mill buildings. One photograph pictured an outside area along the Mill buildings where a number of drums were stored (Figure 2). The historical aerials from 1955, 1960, 1967, 1974, and 1980 were reviewed to determine if the storage area was a temporary or permanent feature. These historical aerials (Appendix C) do not suggest that any long term drum storage occurred at this location.

## Section 3

# Geophysical Survey

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The geophysical survey provided a reconnaissance regarding the occurrence of metal features buried below the surface soil and valuable information regarding the presence of fill material and natural materials along the bank. The specific objectives of the geophysical survey were to identify:

- the extent of buried riprap or other non-natural fill;
- the locations of possible piping and outfalls; and
- general subsurface features that could impact the conceptual model or sampling program.

The geophysics survey was performed at the Plainwell Mill on April 24, 2008. The survey used two separate types of tools to minimize interference from power lines and provide better imaging for locating outfalls or other possible migration conduits. The first survey performed was using a Geonics EM-61, a time-domain metal detector that can be used where above-ground metallic objects are present without significant adverse effects on the data. The second survey utilized a GSSI profiler to collect electrical conductivity data at three depth levels (surface soil, shallow [1 to 2 feet], and deep [5 to 6 feet]). All survey data was collected in transects parallel to the Kalamazoo River and the positions were controlled and recorded using global positioning (GPS).

Figure 3 shows the results from the metal detection survey along the banks of the Plainwell Mill in comparison with the available soil PCB concentrations. The red to pink colors indicate metallic objects detected by the survey equipment. Whereas the yellow to green shaded areas are not expected to contain metallic objects. There were a total of six metal anomalies interpreted by the geophysics analyst to be of interest these have been identified as Metallic Objects A-F on Figure 3 and Table 3. Of particular interest is Metallic Object B located on the eastern portion of the site. This metallic object is co-located with the oil impacted soil that was discovered during the Plainwell Mill Banks Emergency Action and is near the former Transformer Station. The metal detection survey results suggest that this metallic object may extend from the Mill buildings to the river through the existing manhole (Metallic Object C). A visual assessment of the manhole was conducted on May 24, 2008. This assessment included removing the manhole cover and observing the direction of underground piping (Appendix E). The review indicated that three underground lines were connected to the manhole, but none were consistent with the direction of the river or Metallic Object B. Photographs taken during the visual assessment are attached as Appendix E. Alternate hypotheses are that there may be metallic readings from reinforced concrete, from abandoned corrugated piping, wire, or potentially debris associated with the former transformer station. This area will remain a focus area during the Phase 2 investigation activities.

The remaining Metallic Objects (C-G) could be interpreted as steel or reinforced concrete discharge pipes. It is notable that the bank soil locations with elevated concentrations of PCB in the soil are not co-located with any of the identified Metallic Objects.

**Table 4**  
**Interpretation of Metallic Objects Located on Figure 2**

<b>Metallic Object</b>	<b>Interpretation</b>
A	Possible Discharge Pipe
B	Unidentified
C	Manhole Cover
D	Possible Discharge Pipe
E	Possible Discharge Pipe
F	Large Manhole Cover
G	Possible Discharge Pipe

Note: Please see Figure 3 for Metallic Object locations.

The second geophysical survey performed collected electrical conductivity data. The different electrical conductivity readings provide an indication of different soil types. Typically, less dense materials are less conductive (Red to Yellow) while more dense materials are more conductive (Blue to Green). Due to the native geologic conditions present in Plainwell, the presence of less conductive soils suggests the potential for less compacted fill materials in contrast to the more conductive and undisturbed native soils. Figure 4 and Figure 5 show the soil conductivity maps for the shallow and deep soil depths, respectively.

The shallow and deep conductivity maps display similar features but at different intensities, suggesting that different fill may exist at different depths. Table 4 provides an interpretation of the different soil conductivities observed during the survey. Both the shallow and deep survey show three low conductivity areas (Soil Conductivity Areas H to J); two narrow bands along the river in front of the Mill buildings and essentially the entire eastern portion near the Mill Race. These low conductivity areas as previously indicated are likely composed of some type of coarse fill material. The location of the some fill areas appears to correlate with the elevated PCB concentrations found during the Plainwell Mill Banks Emergency Action (Areas I and J). The areas of higher conductivity near the Mill buildings are likely composed of naturally dense or manually compacted soils.

**Table 5**  
**Areas of Varying Conductivity**

<b>Areas of Varying Conductivity</b>	<b>Interpretation</b>
H	Potential Coarse Fill
I	Potential Coarse Fill
J	Potential Coarse Fill

Note: Remaining areas represent more conductive materials (more dense or fine grained soils).

# Section 4

## Compilation of PCB Data, Geophysical Survey, and Historical Review

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### 4.1 Assessment of Site Conditions

The Phase 2 investigation plan was developed based upon the summarized information from the Phase 1 Definition of Site Conditions. To accommodate that evaluation, several study questions were presented in the Mill RI/FS Addendum No. 1 Work Plan. Answers to these questions are presented below based upon the information obtained during the Phase 1 work activities.

- Is there evidence of any release that needs immediate action?

Currently, there is no evidence of ongoing releases that need immediate action. The bank along the Plainwell Mill buildings was covered with approximately 2 to 3 feet of clay and armored to prevent any potential ongoing releases.

- Is/are there source(s) identified in the historical review that could be the primary source of the oily material identified near the former transformer pad?

There is information in various Phase I reports for the Plainwell Mill that PCBs were contained in on-site electrical equipment and could have been present in some of the furnish that was a raw material in paper recycle/manufacture. However, the specific locations where PCBs may have been used within or behind the nearby Mill buildings was not available from these reports or other resources evaluated during the historical review. There were also no anecdotal or reported releases of oily or PCB containing materials prior to the facility's closure in 2000. Thus, a possible primary source or location has not been identified.

- Is there a possible conduit identified from the historical review and/or the geophysical survey that could link the material near the transformer station to the elevated concentrations measured at PM-SD-041?

The geophysical survey did identify several potential conduits, but they do not link the elevated PCB concentrations with the oil impacted soil. The oil impacted soil, found near the former transformer pad, is present in an area where the metal detection survey found a large area suggesting metallic material was present underground (Metallic Object B). Metallic Object B cannot be identified at this time. Results from the soil conductivity survey also suggest that this area may contain coarse fill material. The unknown metallic object and the extent of the oil impacted soil will be investigated during Phase 2 of Addendum #1.

- Is/are there source(s) identified in the historical review that could cause the elevated PCB concentrations measured along Zone D?

Although several outfalls were historically located in this area, there appears to be a strong correlation between the elevated PCB concentration and the probable presence of coarse fill material. The delineation of coarse fill material within MB-2 (Soil Conductivity Area I) and the location of the most elevated PCB concentrations near the center of the Mill Bank match well (Figure 5). This

relationship suggests that the PCBs present in soil/sediment adjacent to the banks may be associated with contaminated fill material.

- Are there areas near possible sources or conduits that would allow sampling with less intrusive techniques?

With the presence of coarse fill, rip rap and large concrete rubble onsite it is likely that test pits will need to be utilized to adequately characterize the source of the oil impacted soil and the elevated PCB concentrations.

## 4.2 Preliminary Conceptual Site Model

The information gathered during the Phase 1 site conditions review allows development of a preliminary site conceptual model for providing information requested by the USEPA in their February 19, 2008, letter. The three issues identified by the USEPA are repeated as follows:

1. Determine the source of the oily sheen; including possible presence of NAPL.
2. Determine the source of the high PCB concentrations along the bank.
3. Determine whether NAPL, if present, is entering the Kalamazoo River.

Based upon the information described previously, the historic "Outfall Near Pump House" (noted on Figure 2) is near the location of the elevated PCB concentrations along the Mill banks and will be assessed as part of the investigation. This is the only outfall where there is a possibility that a relationship may exist with the elevated PCB concentrations. The geophysical survey confirms that there is extensive fill material present on the banks where both the elevated PCB concentrations were measured and the oil impacted soil was located. Thus, the preliminary site model suggests both the oily sheen and the elevated PCB concentrations may be associated with historic fill material placed along the bank. Uncertainties remain with respect to the identity and implications of the large metallic anomaly near the transformer pad (identified as Metallic Object B on Figure 3). Uncertainties in the model are primarily due to the potential influence of the outfall in the vicinity of the elevated PCB concentrations, the presence of either additional discharge lines, or currently unknown source materials that could not be identified through either the historic or the geophysical review. The Phase 2 Investigation will help respond to USEPA's requests for information by refining the model through placement of test pits in areas of suspected fill and geophysical anomalies.

# Section 5

## Focused Work Plan for Phase 2 of Addendum No. 1

---

This Phase 2 Work Plan for Addendum #1 at the Plainwell Mill has been prepared to identify sampling locations, methods, and the proposed analytical program. The overall goal is to provide the information requested by the USEPA in their February 19, 2008, letter.

The proposed investigative and sampling plan for the area along the bank has been prepared to specifically address oily material and elevated PCBs discovered during the Emergency Action. In general, test pits are proposed to assess the validity of the preliminary site conceptual model (*i.e.*, that heterogeneous fill material is the source of elevated PCBs and oily material). Additional test pits will be added if needed during the field investigation to identify any additional conduits or confirm the nature, and extent of contamination.

### 5.1 Proposed Test Pit Locations and Analytical Program

Due to the nature of the investigative areas likely to contain fill material and or construction debris, test pits have been selected as the best method for successful site characterization. Test pits will be advanced to either native soils or the water table using an excavator taking care to minimize site disturbances to the extent practical. Additional details and the rationale for the proposed test pit investigation, as related to the USEPA February 19, 2008, letter, and the uncertainties identified in the site conceptual model are presented in Table 6 with some additional explanation provided below.

Test pits will be placed along two areas between the former Mill buildings and the Kalamazoo River banks (the oil impacted soil and the elevated PCB area) as seen on Figure 6. Test pit locations will target the two primary areas of interest—the oil impacted soil and the elevated PCB concentrations. Ten test pits will be located within the site of the oil impacted soil, Metallic Object B, and the former Transformer Station. These test pits will be placed to attempt to identify the source and the extent of the oily impacted material and specific locations will be adjusted depending upon field obstructions and conditions. Additional test pits may be added based upon field observations including the noticeable odors and the presence of visual materials of concern. The test pits will be logged according to the Unified Soil Classification System (USCS) by the on-site field geologist or engineer. Given the importance of the test pit locations to the final interpretation of results, it is assumed that USEPA will provide a designated oversight representative to be on site during test pit excavation. Thus, when field conditions merit placement of additional test pits, the USEPA project manager, or designated alternate, will be readily available to discuss specific test pit locations. In addition, Weyerhaeuser will conduct a kick-off meeting with the USEPA and its field representative(s) at the outset of the field activities.



**Table 6**  
**Site Conceptual Model Uncertainties and Proposed Test Pit Rationale**

Specific Question or Concern	Rationale	Specific Test Pits that Will Address Concern	
USEPA Concerns Identified in February 19, 2008, Letter	1. The cause of the oil sheen and whether free NAPL is the cause.	Test pits will be used to identify the source of the oil impacted soil and extent. In addition, test pits will be used to inspect Metallic Object B detected in the vicinity of the oil impacted soil.	Four Test Pits: TP-4 through TP-8
	2. Whether the NAPL is the cause of the high PCB concentrations observed.	Tests pits will be advanced at eleven locations along the bank to determine if the two areas of concerns are related or connected.	Eleven Test Pits: TP-1 through TP-15 along the Red Dashed Line following the River Bank
	3. Whether NAPL, if present, could be entering the Kalamazoo River.	Observations of site conditions during installation of test pits will determine if NAPL is present, and if so, does it have the potential to enter the river. Test pits will be used to identify the presence of free product or oil saturated soil. (The bank along the Plainwell Mill buildings was sealed with clay and armored to prevent any ongoing releases (Appendix B). In addition, various site visits have not documented any ongoing NAPL releases.	Eleven Test Pits: TP-1 through TP-15 along the Red Dashed Line following the River Bank
Uncertainties with Site Conceptual Model and Other Concerns	4. Are the elevated PCB concentrations associated with the suspected fill material near Soil Conductivity Area I?	Test pits will be advanced within and outside this area to determine subsurface conditions and their relationship between PCB concentrations and the geophysical survey.	Five Test Pits: TP-11 through TP-15
	5. Is the former transformer station a contributing source to the oil impacted soil or elevated PCB concentrations?	Test pits will be placed in the former transformer pad area to determine if any historical releases have occurred.	Three Test Pits: TP-1, TP-2, & TP-3
	6. Are Metallic Objects D and E (likely historic outfalls) potential migration routes or ongoing sources for contamination associated with the elevated PCB or oil impacted soil?	Test pits will be advanced to investigate each of these locations.	Two Test Pits: TP-10 & TP-11
	7. Are historic Mill operations from the storage shed or drum storage area related to the oil impacted soil or elevated PCB concentrations?	Test pits will be placed between these areas of interest and the two areas of concern to determine if the storage areas are contributing to the known issues. If these initial test pits indicate a potential contribution, supplemental test pits will be utilized to determine the source. Location of these supplemental test pits will be determined in conjunction with the USEPA.	Three Test Pits: TP-8, TP-9, & TP-14

Notes:

1. Test pits have been selected as the investigative procedure for the mill bank area due to site conditions. .
2. All test pit locations are approximate and may be moved to provide flexibility for onsite staff and personnel to respond to field conditions and observations during test pit activities.
3. When it is necessary to obtain supplemental information additional test pits may be placed, as conditions allow, to maximize visual observations at adjacent locations.

During this meeting, the schedule for conducting the field activities and primary and alternative procedures for obtaining USEPA approval of field modifications will be reviewed.

An additional five test pits will be placed in the areas where elevated PCBs were detected and near the possible coarse fill material (Soil Conductivity Area I) to better characterize the extent of elevated PCB concentrations (Figure 6). The need for additional test pits will be determined based upon field observations and discussions with the USEPA project manager or designated representative.

Consistent with the February 19, 2008, letter, the analytical program will focus on identify any oil impacted soil and locations that may be sources of PCBs. Therefore, samples collected from each test pit will be analyzed for PCBs and total petroleum hydrocarbons (DRO/GRO). Samples will also be visually classified for soil types as discussed above and screened with a photoionization detector (PID). Up to five selected samples with elevated PID readings or the presence of industrial fill material will be submitted for analysis of PAHs, VOCs and/or RCRA metals. The selection of samples to submit for analysis will utilize a biased sampling approach that will rely on a variety of specific site observations including:

- visible residuals;
- visible petroleum impacts;
- PID readings greater than a baseline of 10 ppm above or background ambient air readings (the ambient air readings will be taken on site beyond the influence of exhaust from equipment);
- notable odors; and
- soil stratigraphy.

The number of samples collected for analysis from each test pit is also dependent upon specific observations made during the test pit excavations. A minimum of one sample per test pit will be collected and analyzed for PCBs and total petroleum hydrocarbons. This sample will be taken at one of several locations:

- from unsaturated soil just above the saturated soil zone as evidenced by the visible presence of groundwater; or
- from the center bottom of the test pit if there is no groundwater visible.

If observed conditions in the test pit warrant collection of additional samples, a total of up to three soil samples may be collected within a single test pit and analyzed for selected parameters based upon visible conditions. Samples will be collected for analysis based upon several possible test pit conditions including:

- changes in fill or soil types;
- modifications in soil color or soils with noticeable odors;
- presence of free product; and
- extended size of the test pit that needs additional characterization.

A summary of the number of samples to be collected and specific analytical program for each area is presented in Table 7. Soil samples will be collected from the side walls of the test pit to ensure collection of a representative sample depth and maintain "in-situ" sample characteristics to the extent practical.

The presence of water within the test pits will be logged and any visual or olfactory observations identified. If conditions warrant, liquids present in the bottom of the test pit may be sampled for PCBs, PAHs, RCRA metals, and VOCs. It has been agreed that analytical results from pooled liquids will be collected for screening purposes and not be directly compared to existing standards. The observations and analytical results will assist in selecting future well locations. The analytical data from these wells will then be compared with appropriate Part 201 criteria.

If sufficient free product is observed, a product sample will be collected for physical characterization (specific gravity and viscosity) of the floating material. It is anticipated that the test pits will be placed to a depth to either intersect the groundwater or native soils. Where necessary to obtain additional data, an attempt will be made to excavate to a greater depth if conditions allow (*e.g.*, minimal sloughing, infiltration, and low water turbidity). If test pits are excavated below the water table, removal of saturated soils from the test pit will be minimized to the extent practical. All of this information will be used to refine the Phase I Remedial Investigation groundwater monitoring program, if needed.

**Table 7**  
**Proposed Analytical Program for Test Pit Investigations**

Area	Number of Test Pits	Minimum number of Laboratory Analysis		
		PCBs	TPH (DRO/GRO)	PAHs, RCRA Metals & VOCs
Oil Impacted Soil Area	10	10	10	Up to five additional samples will be submitted for analysis of PAHs, RCRA Metals and VOCs depending upon site observations.
Elevated PCB Area	5	5	5	

Notes:

1. All test pit locations are approximate and may be moved to provide flexibility for onsite staff and personnel to respond to field conditions and observations during test pit activities.
2. When it is necessary to obtain supplemental information additional test pits may be placed, as conditions allow, to maximize visual observations at adjacent locations.

The soil excavated while performing test pits will initially be placed on a tarp to minimize contact with surface soil. If test pit soils are visually stained or have a strong petroleum odor, or as measured with a PID indicate volatiles greater than 10 (PID Units), excavated soils will be containerized in a small lined 5 cubic yard dumpster for landfill characterization and disposal. After receipt of characterization data, stockpiled materials will be disposed of at an appropriate off-site landfill. Three small dumpsters will be on site during the investigative activities to manage contaminated soil encountered from the area of oil impacted soil and elevated PCB area separately and one extra, for use as needed. If soils appear to be native soil or other non-contaminated fill materials, the soil will be placed back into the original excavation area.

Due to the known issues associated with the presence of oil impacted soil and elevated PCB concentrations, test pits will not be located immediately adjacent to the Kalamazoo River or the rip rap present along the banks, maintaining intact the current clay containment layer. Appropriate spill containment and control measures will be arranged at each test pit location to avoid any potential release to the river. The existing site Spill Contingency Plan will be reviewed and updated as needed prior to initiation of field work to reflect the activities being proposed in this Work Plan. The plan will include a response approach for encountering underground conduits, drums, or tanks as well as a containment plan for encountering free product.

## **5.2 Report**

The information obtained from this investigation will be summarized in a technical memorandum that will be used in refining data collection for the RI. An outline of the report will be prepared for USEPA input prior to final report preparation. The technical memorandum is expected to include a refinement of the Geophysical data based upon site observations along with an updated site conceptual model.

## **5.3 Anticipated Schedule**

The following schedule is proposed to allow collection of the Phase 2 information in October 2008, prior to extended cold weather and snow.

- August 18, 2008: Conference call with the USEPA and MDEQ to discuss comments on revisions to Draft Phase 2 Work Plan
- August 25, 2008: Submit Final Phase II Addendum No. 1
- September 2, 2008: USEPA approval of Final Phase II Addendum Work Plan
- Week of September 19, 2008: Implementation of field activities





# KALAMAZOO RIVER

## Legend

- BBL Soil Boring - 1996
- CDM Soil Boring - 2001
- ▲ ERM Phase II - Groundwater Data - 1997
- ERM Phase II - Soil Data - 1997
- ▲ FTCH Phase II- Groundwater Data - 2006
- RMT Mill Emergency Action - Soil Data - '07-'08
- BBL Outfall/Manhole Sediment Sample - 1996

- Former Tank Locations
- Former Transformer Station

## NOTES:

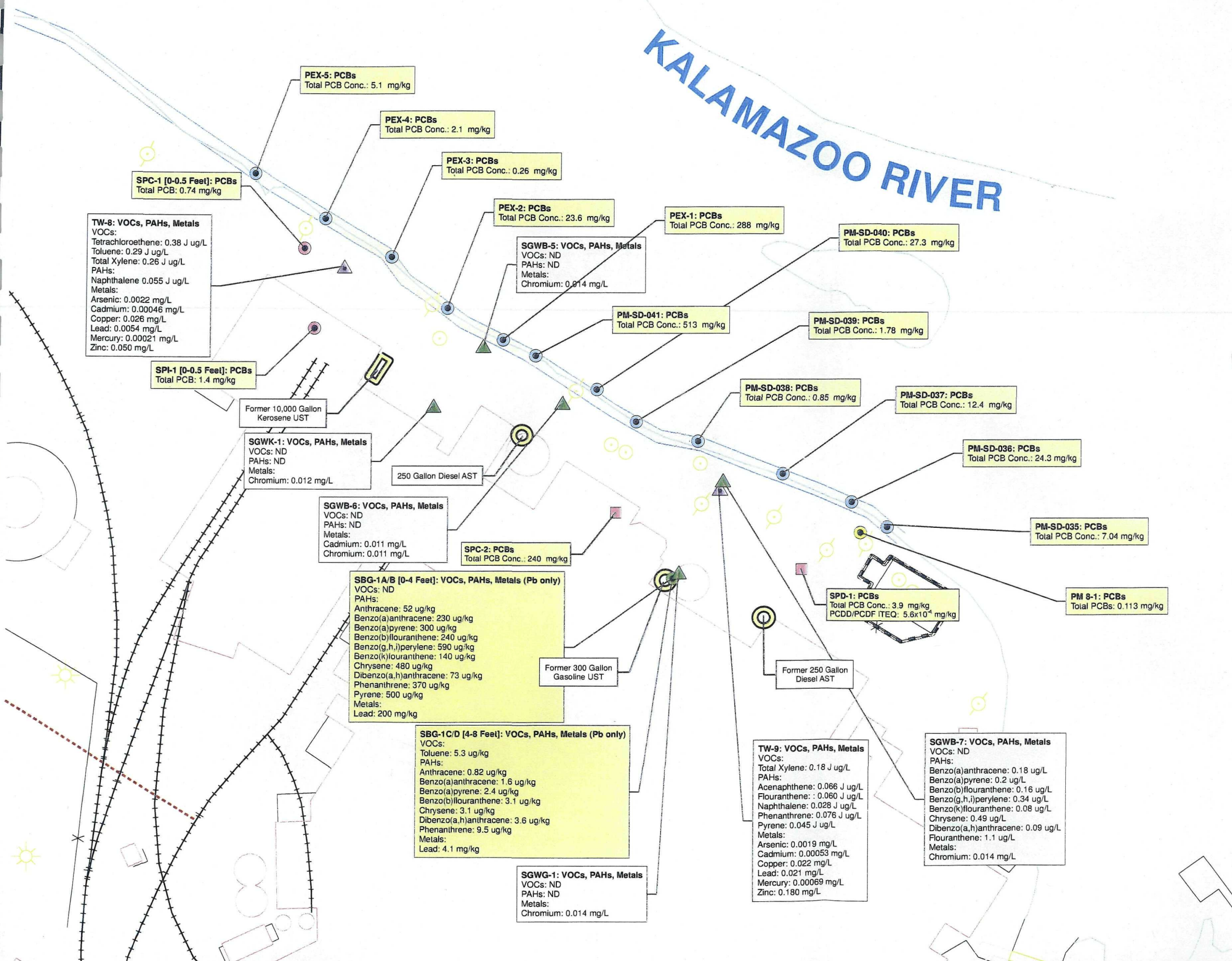
- The blue shaded boxes indicate groundwater data, whereas the yellow shaded boxes indicate soil/sediment data.
- Tank locations shown on the drawing are approximate.
- All groundwater analytical data was collected from temporary wells.
- "ND" Indicates that no detects for analyzed compounds.
- If analytical compounds were detected only those above the detection limit are presented.
- Depth for all of RMT Mill Emergency Action Soil Data was collected from 0-0.5 Feet.
- The outfall sewer line and manhole sediment sampled by BBL in 1996 was removed. The outfall was also removed from service by plugging both ends with concrete.

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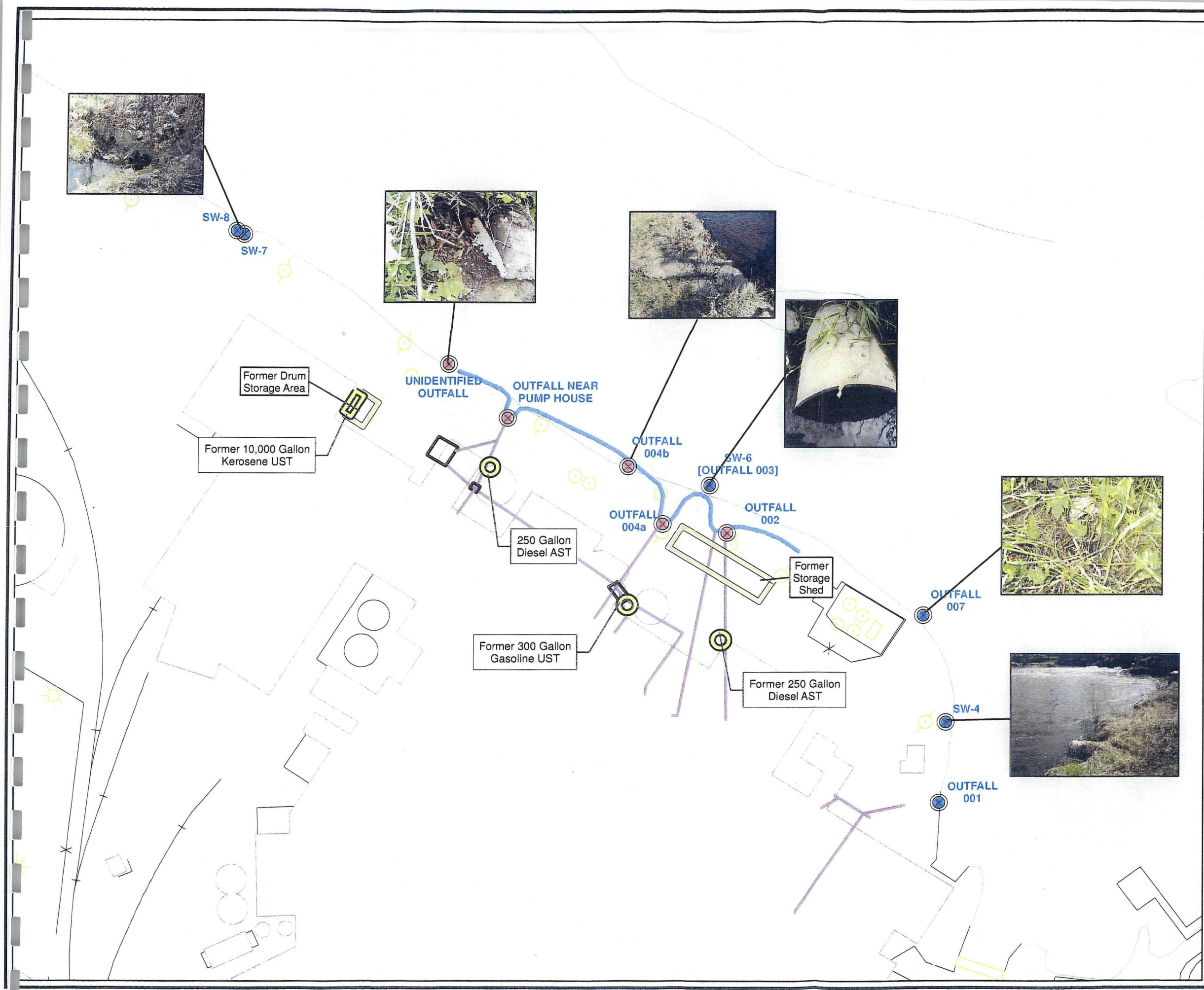
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SHEET TITLE: <b>PLAINWELL MILL BANKS PREVIOUSLY COLLECTED ANALYTICAL DATA NEAR MILL BUILDINGS</b>		
DRAWN BY: WEBERN	SCALE: FINAL	PROJ. NO. 00-05133.01
CHECKED BY:		FILE NO. 51330103.Fig1.mxd
APPROVED BY:	DATE PRINTED: 9/19/2008	<b>FIGURE 1</b>
DATE: SEPTEMBER 2008		

**RMT**

150 N. Patrick Blvd., Suite 180  
Brookfield, WI 53045-5854  
Phone: 262-879-1212  
Fax: 262-879-1220







# LEGEND

## Past and Present Outfall Locations

- Clearly Visible
- Not Visible

## Historic Site Features

- Shoreline - Oct. 1963
- Sewer Lines
- Previous Site Features
- Connection Box or Sump
- Former Tank Locations


## NOTES

- LOCATIONS ARE BASED ON HISTORICAL PERMIT FILES, ENGINEERING DRAWINGS, AND RMT'S SITE OBSERVATIONS.
- STORM SEWER AND PROCESS OUTFALL PHOTOGRAPHS WERE TAKEN BY RMT DURING A FIELD VISIT THE WEEK OF 7/16/07.

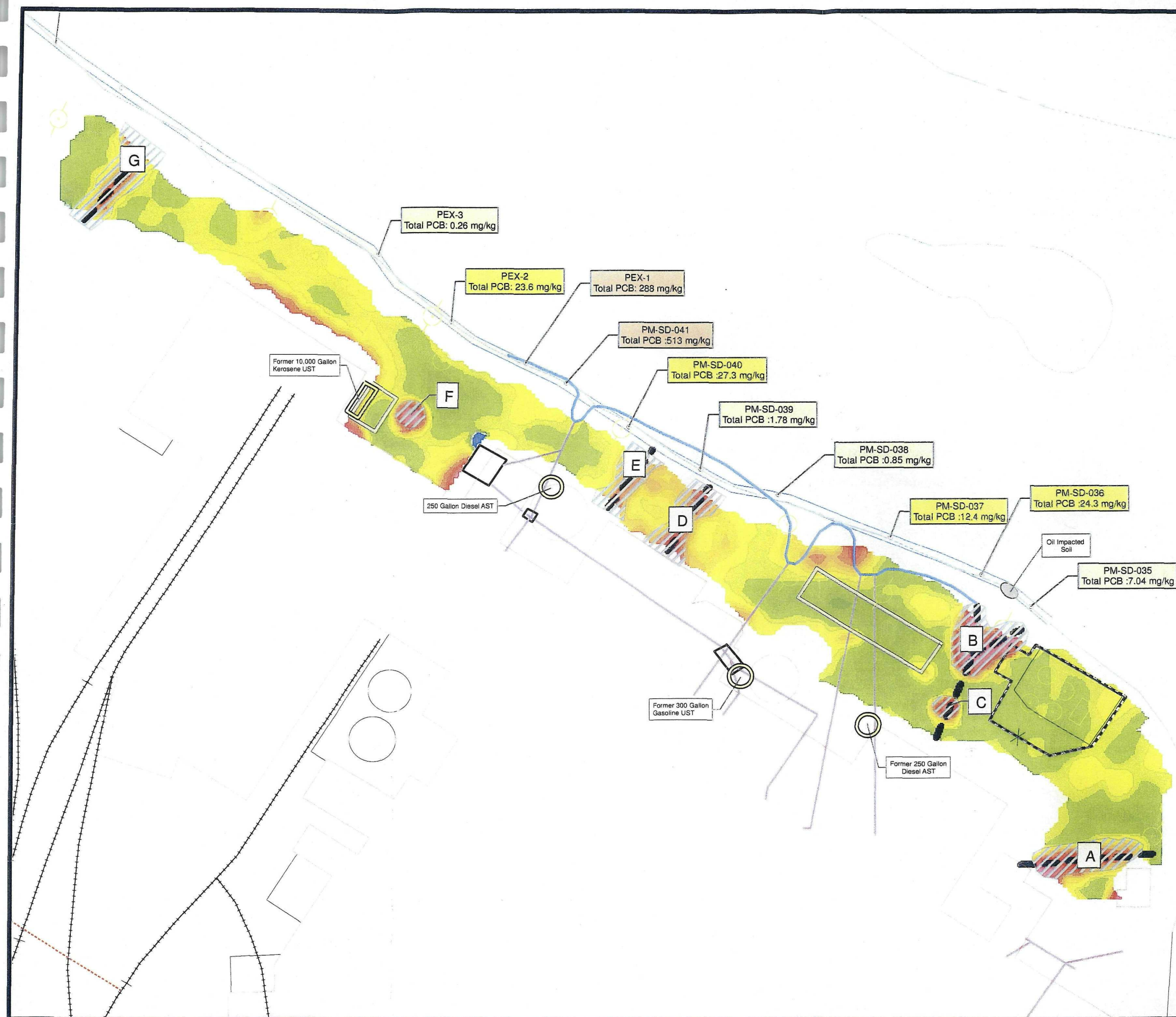


1 inch equals 66.7 feet



PROJECT:			WEYERHAEUSER COMPANY PLAINWELL MILL - OU7 PHASE 2 OF ADDENDUM #1		
SHEET TITLE:					
CURRENT OUTFALLS, HISTORIC OUTFALLS, AND PREVIOUS SITE FEATURES					
DRAWN BY:		WEBERN		SCALE:	
CHECKED BY:				FINAL	
APPROVED BY:		DATE PRINTED:		PROJ. NO.:	
DATE:		SEPTEMBER 2008		9/19/2008	
				FIGURE 2	
				150 N. Patrick Blvd., Suite 180 Brookfield, WI 53045-5854	
				Phone: 262-879-1212 Fax: 262-879-1220	





## LEGEND



Metallic Object

### Historic Site Features

Shoreline - Oct. 1963

Sewer Lines

Previous Site Features

Connection Box or Sump

Former Tank Locations



Former Transformer Station

RMT Mill Emergency Action - Soil Data

### Color Description

The red to pink colors on the figure represent potential metal objects detected by the EM survey. Whereas, the green to yellow areas are less likely to contain metal.

### NOTES:

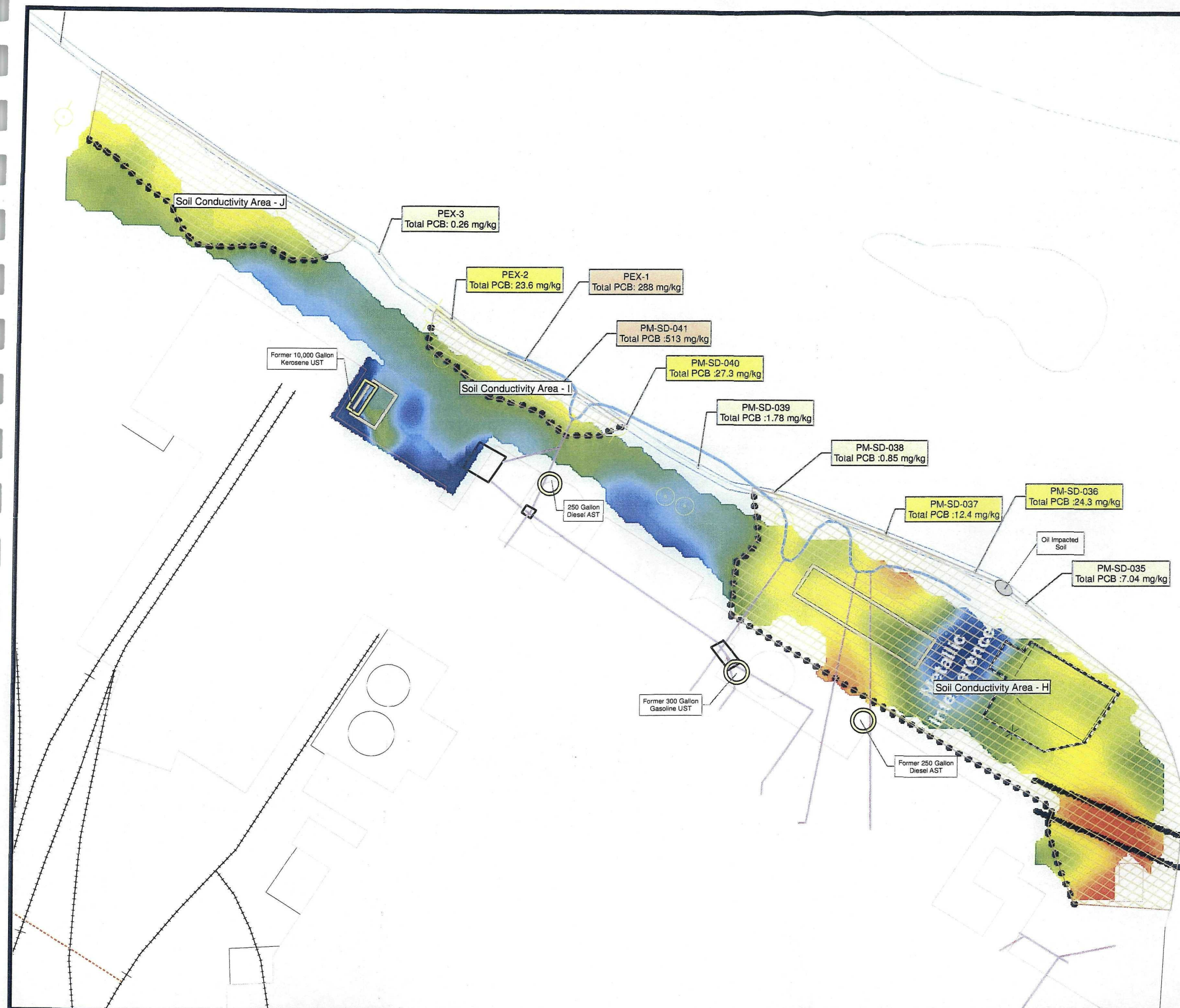
1. Metal detection survey was completed on 4/24/08.
2. The black dashed lines were provided by the geophysics analyst during the survey interpretation.

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1 INCH EQUALS 50 FEET  
1:600

FINAL

PROJECT: WEYERHAEUSER COMPANY PLAINWELL MILL - OU7 PHASE 2 OF ADDENDUM #1			
SHEET TITLE: METAL DETECTION SURVEY			
DRAWN BY: WEBERN	SCALE: AS NOTED	PROJ. NO. 00-05133.01	<b>FIGURE 3</b>  <b>RMT</b> 150 N. Patrick Blvd., Suite 180 Brookfield, WI 53045-5854 Phone: 262-879-1212 Fax: 262-879-1220
CHECKED BY:	DATE PRINTED: 9/19/08	FILE NO. 5:330103.Fig3.mxd	
APPROVED BY:	DATE: SEPTEMBER 2008		





## LEGEND



Soil Conductivity Area

## Historic Site Features

Shoreline - Oct. 1963

Sewer Lines

Previous Site Features

Connection Box or Sump

Former Tank Locations

Former Transformer Station

RMT Mill Emergency Action Data

## Color Description

The red to orange colors on the figure represent less dense soils detected by the soil conductivity survey. Whereas, the green to blue are more dense likely associated with undisturbed native soil.

## NOTES:

1. Shallow soil conductivity survey was completed on 4/24/08.
2. The black dashed lines were provided by the geophysics analyst during the survey interpretation.

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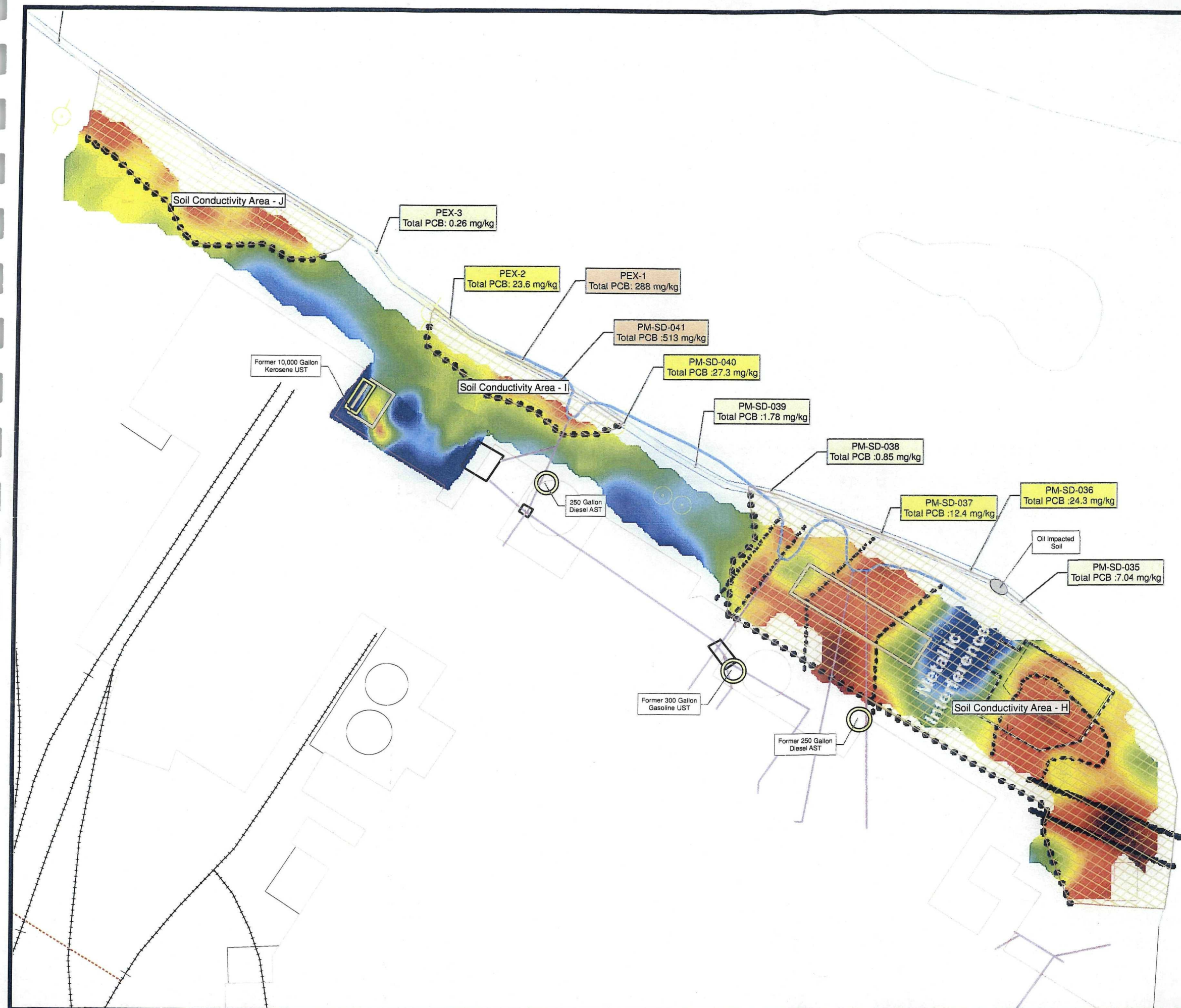
FINAL

PROJECT: <b>WEYERHAEUSER COMPANY PLAINWELL MILL - OU7 PHASE 2 OF ADDENDUM #1</b>		
SHEET TITLE: <b>SHALLOW SOIL CONDUCTIVITY SURVEY</b>		
DRAWN BY: WEBERN	SCALE: AS NOTED	PROJ. NO. 00-05133.01
CHECKED BY:	DATE PRINTED: 9/19/08	FILE NO. 51330103.Fig4.mxd
APPROVED BY:	DATE: SEPTEMBER 2008	<b>FIGURE 4</b>

**RMT**

744 Heartland Trail  
Madison, WI 53717-1934  
P.O. Box 8923 53708-8923  
Phone: 608-831-4444  
Fax: 608-831-3334





## LEGEND

Soil Conductivity Area

### Historic Site Features

Shoreline - Oct. 1963

Sewer Lines

Previous Site Features

Connection Box or Sump

Former Tank Locations

Former Transformer Station

RMT Mill Emergency Action Data

### Color Description

The red to orange colors on the figure represent less dense soils detected by the soil conductivity survey. Whereas, the green to blue are more dense likely associated with undisturbed native soil.

### NOTES:

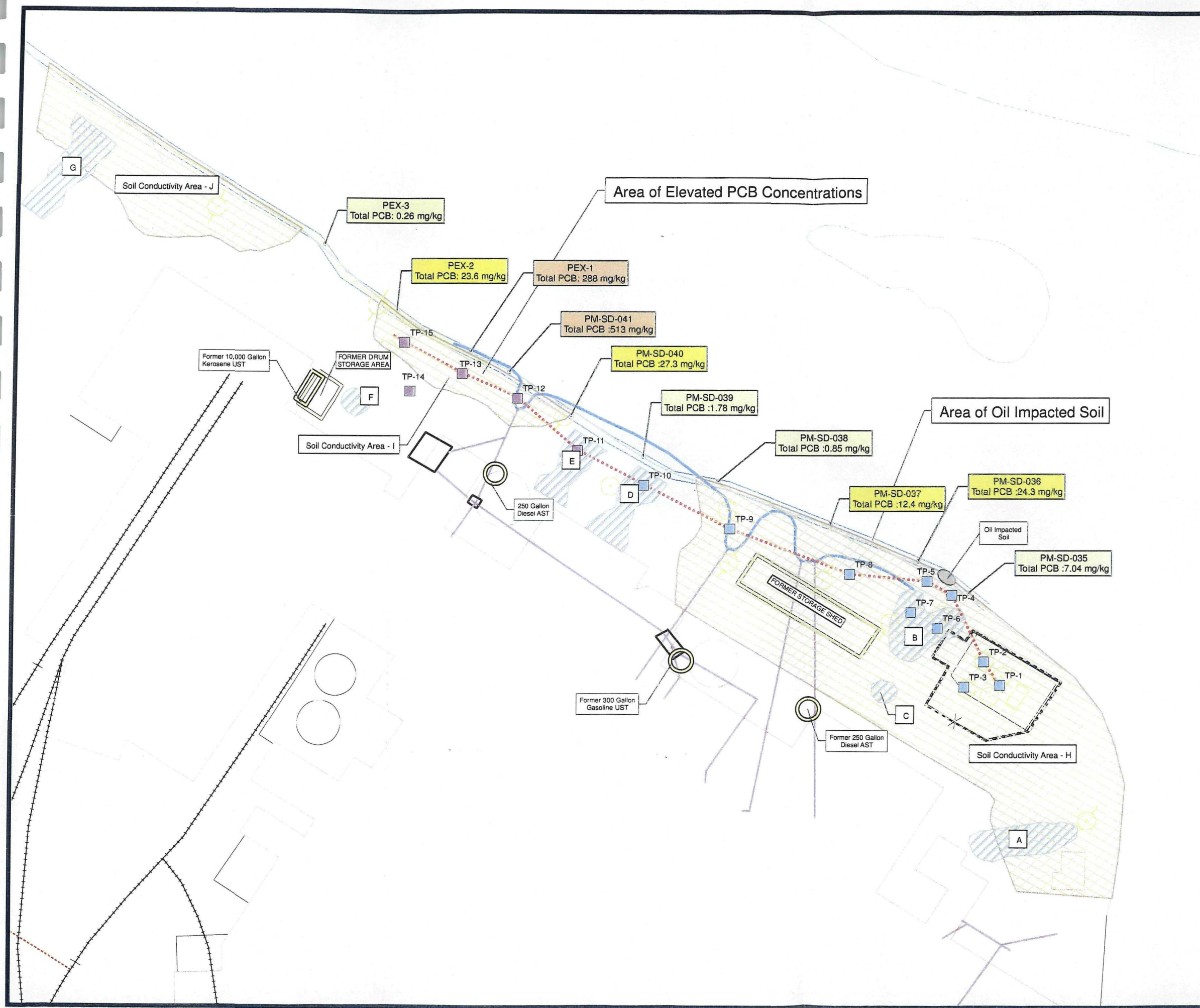
1. Deep soil conductivity survey performed on 4/24/08.
2. The black dashed lines were provided by the geophysics analyst during the survey interpretation.

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FINAL

PROJECT:		WEYERHAEUSER COMPANY PLAINWELL MILL - OU7 PHASE 2 OF ADDENDUM #1	
SHEET TITLE:		DEEP SOIL CONDUCTIVITY SURVEY	
DRAWN BY:	WEBERN	SCALE:	PROJ. NO. 00-05133.01
CHECKED BY:		AS NOTED	FILE NO. 51330103.Fig5.mxd
APPROVED BY:		DATE PRINTED:	FIGURE 5
DATE:	SEPTEMBER 2008	9/19/08	
RMT		150 N. Patrick Blvd., Suite 180 Brookfield, WI 53045-5854 Phone: 262-879-1212 Fax: 262-879-1220	





## LEGEND

### Proposed Test Pit Locations

- Oil Impacted Soil Test Pits
- Elevated PCB Conc. Test Pits

Bank Test Pit Cross Section

### Area of Interest

- Metallic Object
- Soil Conductivity Area

### Historic Site Features

- Shoreline - Oct. 1963
- Sewer Lines
- Previous Site Features
- Connection Box or Sump
- Former Transformer Station
- Former Tank Locations
- RMT Mill Emergency Action Data

### NOTES:

1. All test pit locations are approximate and may change depending upon site conditions.
2. Test pit locations near the former transformer station will be refined after receipt of information from Consumers Power.
3. "Soil Conductivity Areas" refers to areas of less dense soils detected during the soil conductivity survey.

0 50 100  
FEET  
1 INCH EQUALS 50 FEET  
1:600

FINAL

PROJECT:		WEYERHAEUSER COMPANY PLAINWELL MILL - OU7 PHASE 2 OF ADDENDUM #1	
SHEET TITLE:		PLAINWELL MILL BANKS PROPOSED TEST PIT LOCATIONS	
DRAWN BY:	WEBERN	SCALE:	AS NOTED
CHECKED BY:		PROJ. NO.	00-05133.01
APPROVED BY:		FILE NO.	51330103.Fig6.mxd
DATE:	SEPTEMBER 2008	DATE PRINTED:	9/19/08
		<b>FIGURE 6</b>	
<b>RMT</b>		150 N. Patrick Blvd., Suite 180 Brookfield, WI 53045-5854 Phone: 262-879-1212 Fax: 262-879-1220	

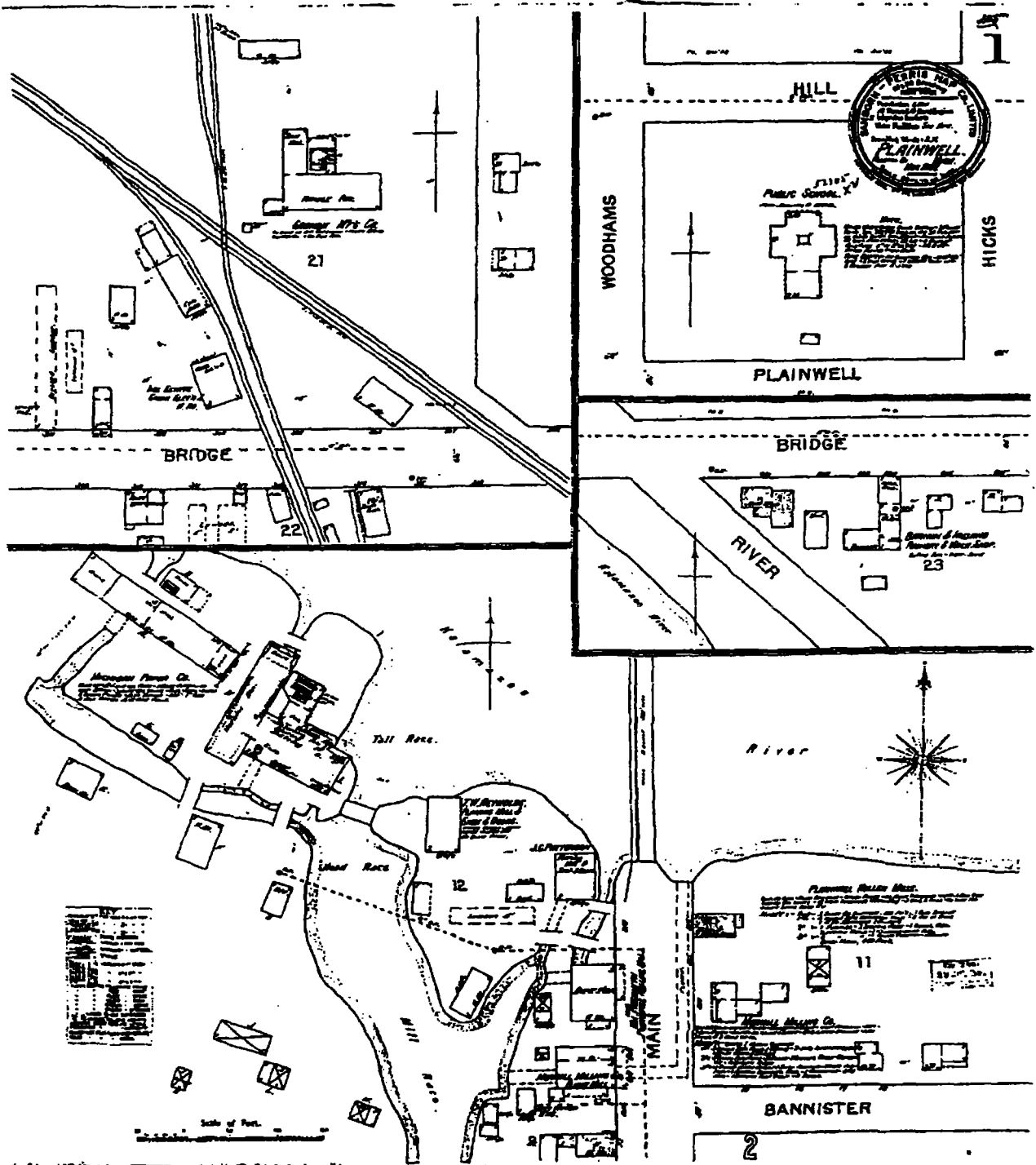
# Appendix A

## Sanborn Maps

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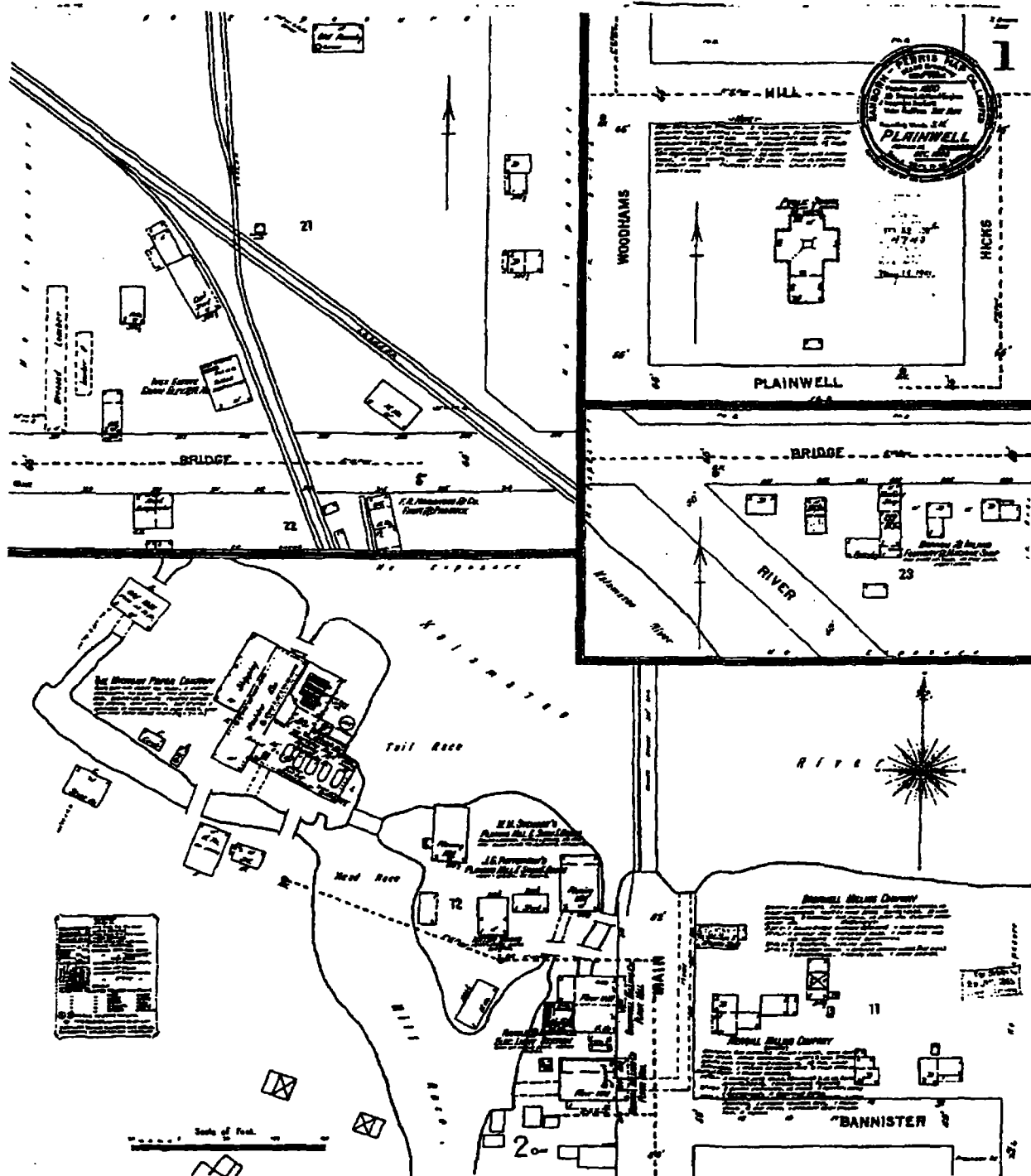


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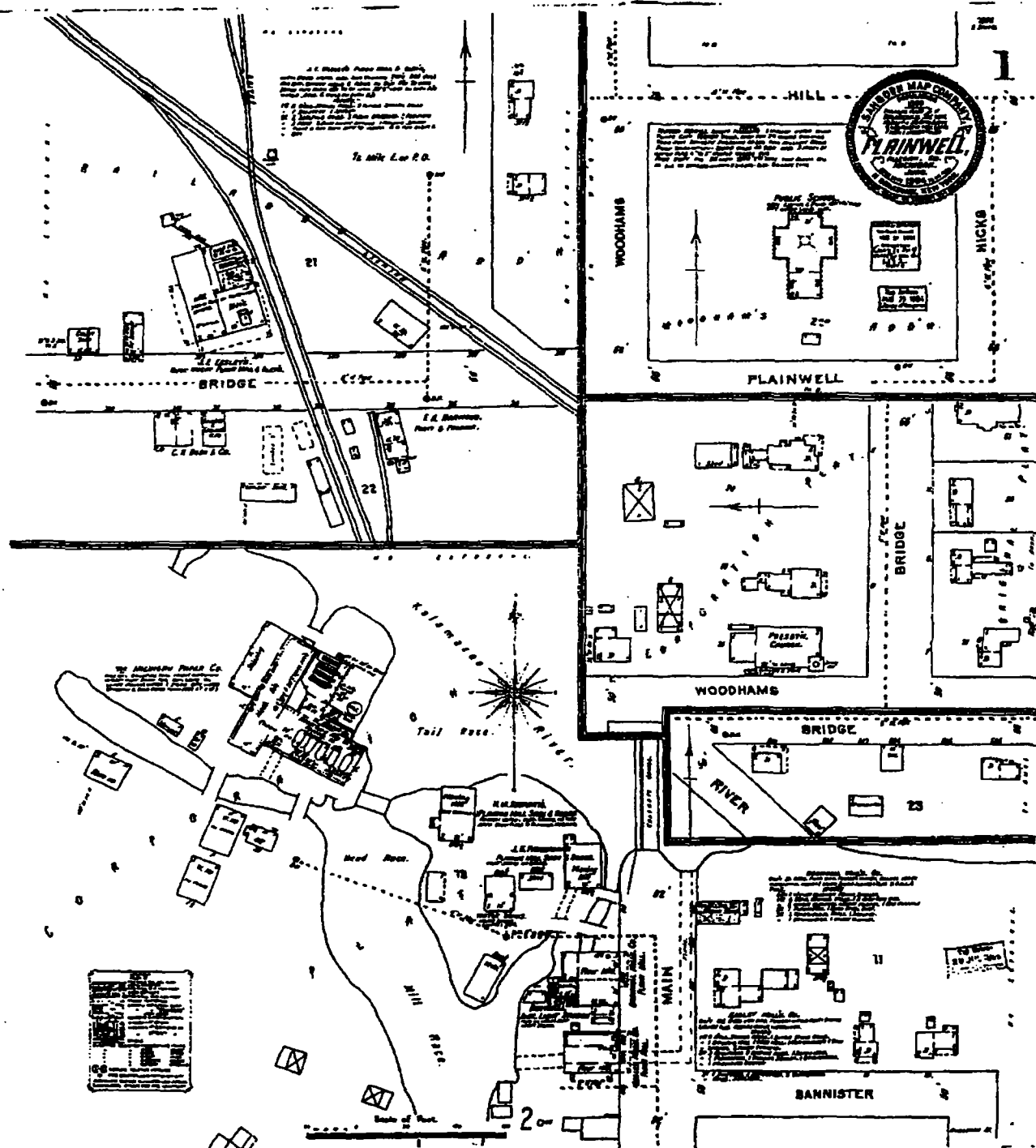


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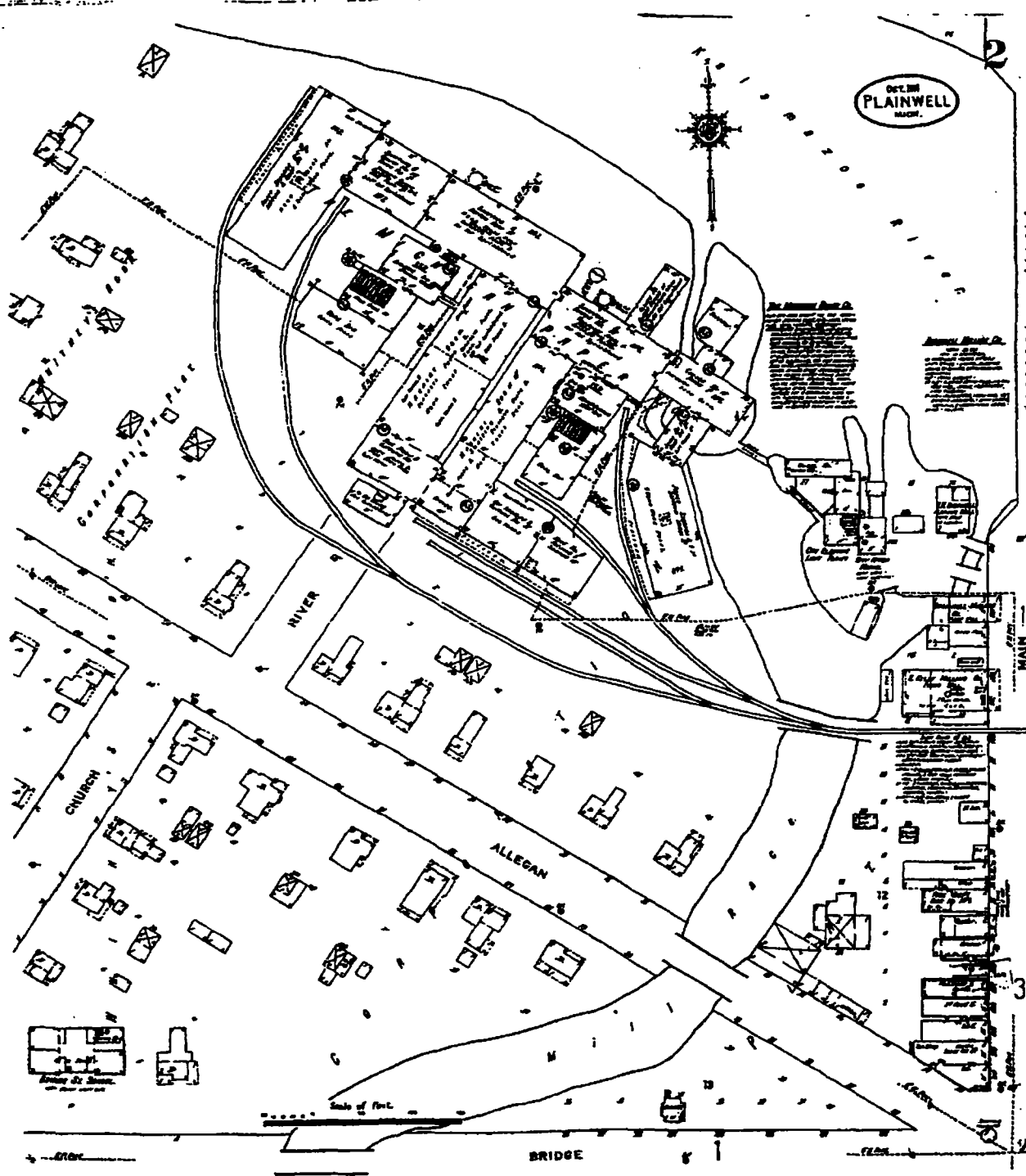
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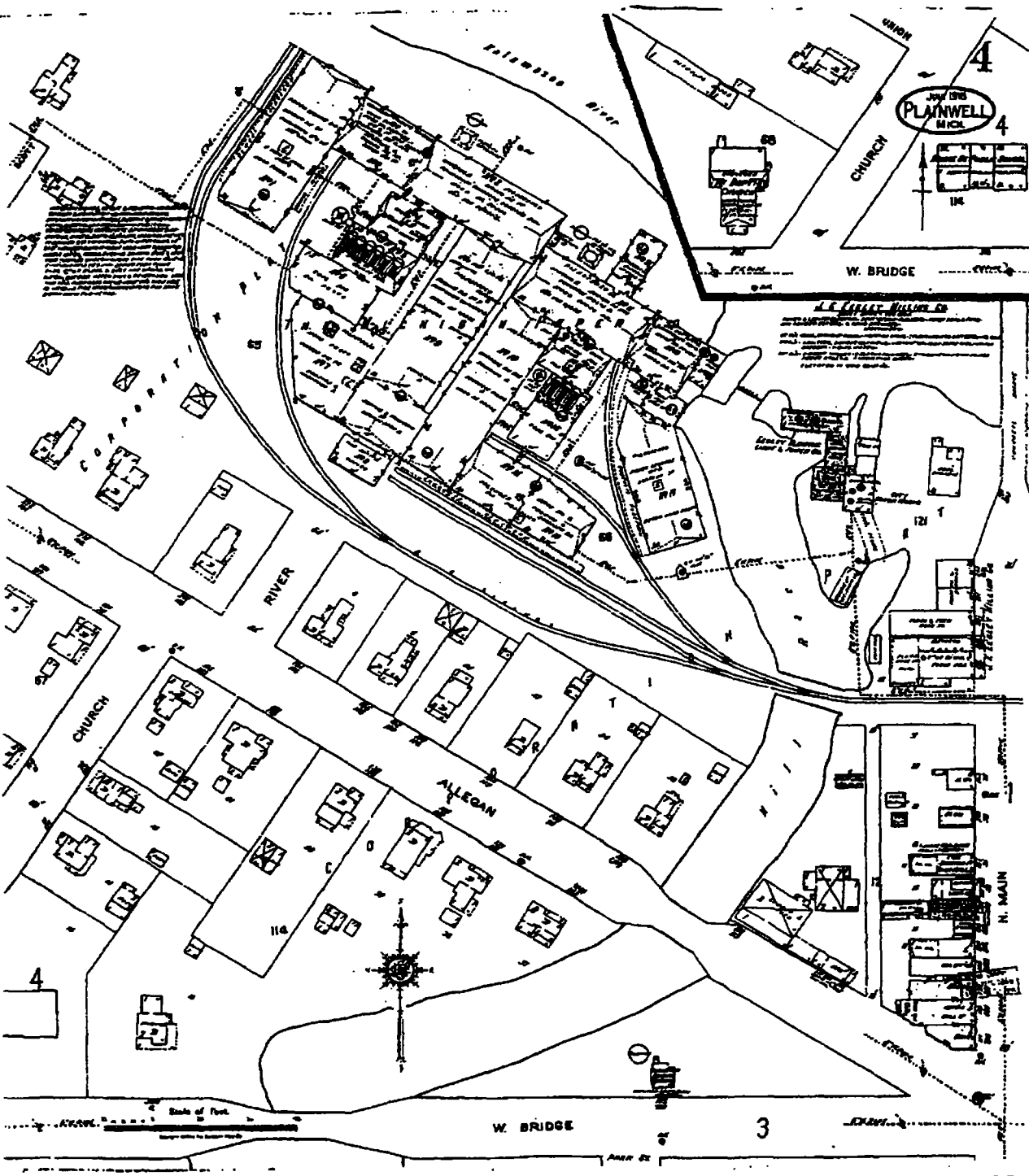


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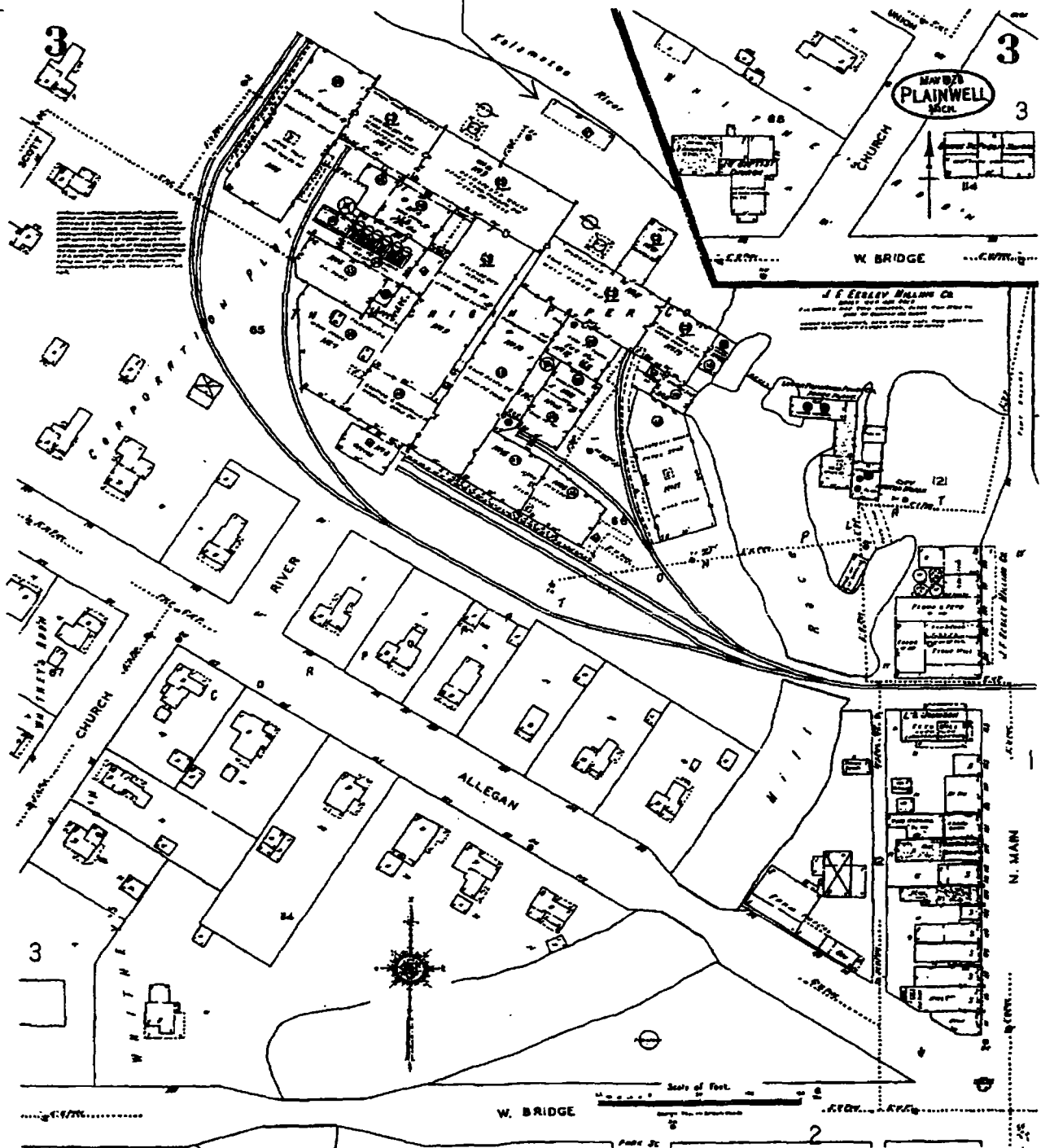
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Small Structure

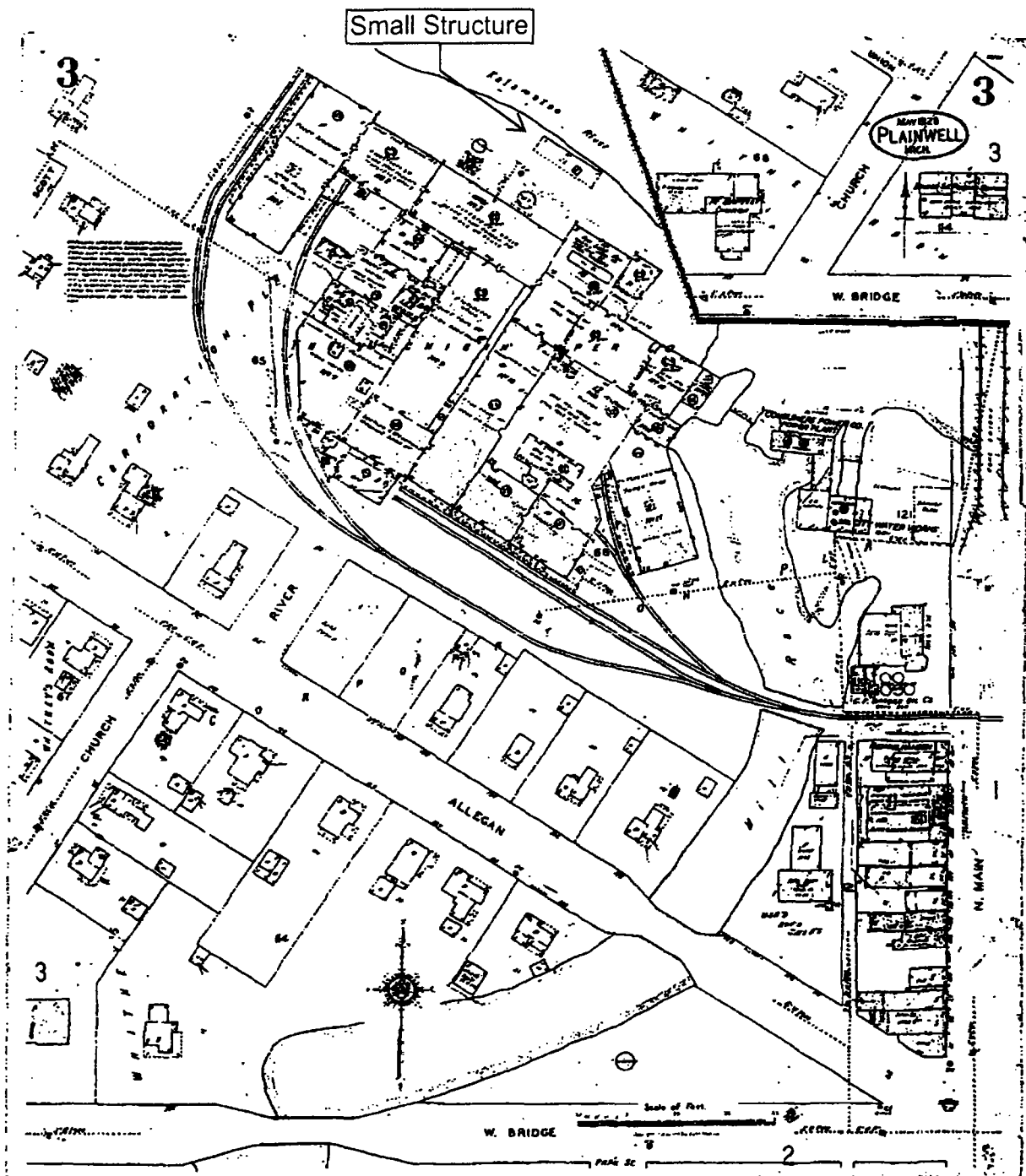


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# Appendix B

## Zone D Clay and Armor Description

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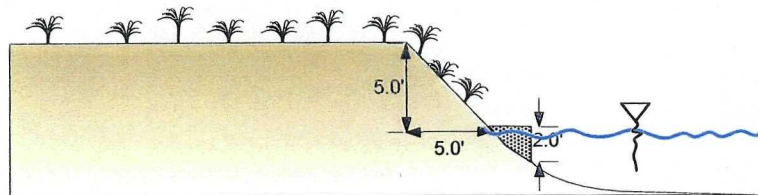
## **Appendix B - Zone D Clay Fill and Armor Construction**

Excavation on 2/5/2008 encountered concrete rubble material and rip rap along Zone D within a silt curtain containment area. Once debris was penetrated, a slight oily sheen began to appear on the water surface (mid afternoon). Excavation halted and floating oil booms were installed around the area to minimize release to river. Additional clay fill material was ordered and delivered to the site the same afternoon. A sample of the clay material was submitted for analysis of volatile organic compounds (VOCs), semivolatile organic compounds (SVOC), polychlorinated biphenyls (PCBs), Total Petroleum Hydrocarbons, RCRA metals, and Pesticides. Results of the analysis are attached.

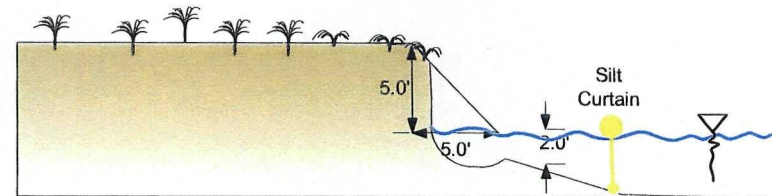
Clay fill material was placed using the backhoe bucket by starting from the base of the excavation and moving up the river bank above the river/bank interface. Since much of the material was located under the water, compaction was performed by using the back of the backhoe bucket. The material was placed in lifts of approximately one foot moving up the bank to achieve a grade angle similar to pre-excavation activities. Final vertical thickness varied from 0-0.5 feet at the outside edge of the excavation to approximately 5 feet near the bank. Once clay material was placed, no visible sheen was present on the water surface or during subsequent site visits.

The design specified a stone (D50 of  $\geq 6$  inches) rip rap along the entire shoreline. Riprap with a D30 of 2 inches will withstand the erosive forces produced along the shoreline at a velocity of 5-6 fps. The larger stone size was specified to address the potential greater stresses on the riprap caused by ice and debris. The river run stone was placed from an elevation approximately 2 feet below river level to 2 feet above the river/bank interface. Details are shown on the attached Figure B-1.

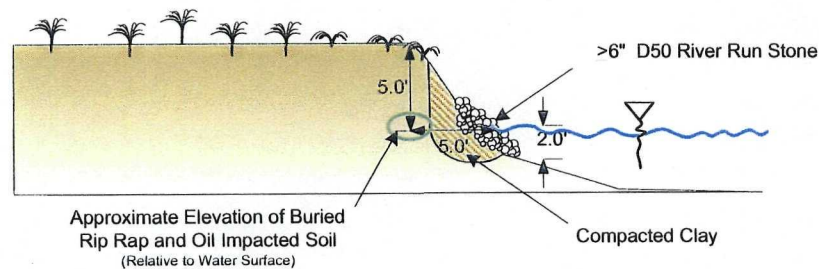
## 1 - ZONE D PRIOR TO EXCAVATION



## 2. ZONE D AFTER EXCAVATION COMPLETE



## 3. ZONE D AFTER CLAY PLACEMENT AND ARMORING



### Clay Selection Criteria:

1. A USCS classification of SC, CH, CL/ML, or ML
2. A saturated hydraulic conductivity of  $1 \times 10^{-7}$  cm/s or less, when compacted to 90% Modified or 95% Standard Proctor Density

Due to site conditions requiring placement of clay into the saturated zone, typical compaction of the material was not possible. Therefore, the clay was compacted in place using the mechanical excavator immediately after placement.

### LEGEND

 Approximate Residuals Location

### Typical Zone D Cross Section

#### NOTE:

1. Bank slopes vary along this reach from location to location.
2. Regrade bank slopes as necessary where bank is disturbed.
3. Residuals estimated to be from 0 to 4 feet in width.
4. The 6-inch D50 river-run stone has a nominal design velocity of 8.5 fps, which will improve stability.

PROJECT: WEYERHAEUSER COMPANY PLAINWELL MILL BANKS EMERGENCY ACTION	
SHEET TITLE: DESIGN FOR ZONE D BANK RECONFIGURATION	
DATE: SEPTEMBER 2008	FIGURE B-1
DRAWN BY: NCW	
RMT	



**Attached**  
**Zone D Soil Sample Descriptions**

**Table B-1 - Description of Samples Collected Along Zone D**

<b>Sample Location</b>	<b>Date</b>	<b>Sample Description</b>	<b>PCB Concentration (mg/kg)</b>
PM-SD-35	1/31/2008	Fine Black Sand, Fuel Oil Odor	7.04
PM-SD-36	1/31/2008	Fine Black Sand, Some Silt, Fuel Oil Odor	24.3
PM-SD-37	1/31/2008	Fine Black Sand, Gray Silt, Very Slight Odor	12.4
PM-SD-38	1/31/2008	Black Gravel, Gray/brown Medium Sand, Gray Silt, Slight Odor	0.85
PM-SD-39	1/31/2008	Black Sand and Gravel, Silt, Slight Odor	1.78
PM-SD-40	1/31/2008	Black Sand and Gravel, Gray Silt, Very slight Odor	27.3
PM-SD-41	1/31/2008	Black Sand and Gravel, Gray Silt, No Odor	513.
PEX-1	2/7/2008	Black Fine to Coarse Sand with Gravel and Trace Residuals, Petroleum Odor	288.
PEX-2	2/7/2008	Coarse Sand with Gravel, Gray to Brown, with Trace Fine Gray Silt, No Odor	23.6
PEX-3	2/7/2008	Brownish Gray Sand and Gravel, No Odor	0.26
PEX-4	2/7/2008	Brownish Gray Sand and Gravel with Cobbles, No Odor	2.1

**Attached  
Laboratory  
Analysis for Clay Fill**

February 25, 2008

RMT, Inc. - Grand Rapids Office  
Attn: Jennifer Overvoorde  
2025 E. Beltline Ave., Suite 402  
Grand Rapids, MI 49546

**Project: Plainwell Mill**

Dear Jennifer Overvoorde,

Enclosed is a copy of the laboratory report, comprised of the following work order(s), for test samples received by TriMatrix Laboratories:

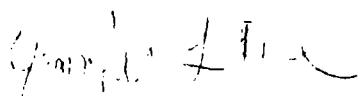
<b>Work Order</b>	<b>Received</b>	<b>Description</b>
0802068	02/06/2008	Laboratory Services

This report relates only to the sample(s), as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC); any qualifications of results, including sample acceptance requirements, are explained in the Statement of Data Qualifications.

Estimates of analytical uncertainties for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice  
Project Chemist

Enclosures(s)

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The total number of pages in this report, including this page, is 30.

## ANALYTICAL REPORT

Client: **RMT, Inc. - Grand Rapids Office**  
 Project: Plainwell Mill  
 Client Sample ID: **PM - Fill - D**  
 Lab Sample ID: **0802068-01**  
 Matrix: Soil  
 Unit: mg/kg dry  
 Dilution Factor: 1  
 QC Batch: 0801287  
 Percent Solids: 88

Work Order: **0802068**  
 Description: Laboratory Services  
 Sampled: 02/05/08 18:29  
 Sampled By: E. Vincke  
 Received: 02/06/08 14:00  
 Prepared: 02/08/08 By: ASC  
 Date Analyzed: 02/14/08 By: JMK  
 Analytical Batch: 8021544

### Extractable Petroleum Hydrocarbons by EPA Method 8015B (Modified)

CAS Number	Analyte	Analytical Result	RL
	DRO - 8015B (C10-C28)	<7.6	7.6
<b>Surrogates</b>	<b>% Recovery</b>	<b>Control Limits</b>	
<i>o</i> -Terphenyl	47	44-137	

## ANALYTICAL REPORT

Client: <b>RMT, Inc. - Grand Rapids Office</b>	Work Order: <b>0802068</b>
Project: Plainwell Mill	Description: Laboratory Services
Client Sample ID: <b>PM - Fill - D</b>	Sampled: 02/05/08 18:29
Lab Sample ID: <b>0802068-01</b>	Sampled By: E. Vincke
Matrix: Soil	Received: 02/06/08 14:00
Unit: mg/kg dry	Prepared: 02/14/08 By: LEW
Dilution Factor: 1	Date Analyzed: 02/14/08 By: LEW
QC Batch: 0801715	Analytical Batch: 8021508
Percent Solids: 88	

### Volatile Petroleum Hydrocarbons by EPA Method 8015B (Modified)

CAS Number	Analyte	Analytical Result	RL
	GRO - 8015B (C6-C10)	<5.7	5.7
<b>Surrogates</b>	<b>% Recovery</b>	<b>Control Limits</b>	
<i>aaa-Trifluorotoluene</i>	96	76-113	

## ANALYTICAL REPORT

Client: **RMT, Inc. - Grand Rapids Office**  
 Project: Plainwell Mill  
 Client Sample ID: **PM - Fill - D**  
 Lab Sample ID: **0802068-01**  
 Matrix: Soil  
 Unit: mg/kg dry  
 Dilution Factor: 1  
 QC Batch: 0801710  
 Percent Solids: 88

Work Order: **0802068**  
 Description: Laboratory Services  
 Sampled: 02/05/08 18:29  
 Sampled By: E. Vincke  
 Received: 02/06/08 14:00  
 Prepared: 02/15/08 By: BJH  
 Date Analyzed: 02/18/08 By: JMK  
 Analytical Batch: 8021934

### Polychlorinated Biphenyls (PCBs) by EPA Method 8082

CAS Number	Analyte	Analytical Result	RL
12674-11-2	PCB-1016	<0.37	0.37
11104-28-2	PCB-1221	<0.37	0.37
11141-16-5	PCB-1232	<0.37	0.37
53469-21-9	PCB-1242	<0.37	0.37
12672-29-6	PCB-1248	<0.37	0.37
11097-69-1	PCB-1254	<0.37	0.37
11096-82-5	PCB-1260	<0.37	0.37
<b>Surrogates</b>		<b>% Recovery</b>	<b>Control Limits</b>
<i>Decachlorobiphenyl</i>		91	36-136
<i>Tetrachloro-m-xylene</i>		89	46-120

## ANALYTICAL REPORT

Client: **RMT, Inc. - Grand Rapids Office**  
 Project: Plainwell Mill  
 Client Sample ID: **PM - Fill - D**  
 Lab Sample ID: **0802068-01**  
 Matrix: Soil  
 Unit: mg/kg dry  
 Dilution Factor: 1  
 QC Batch: 0801259  
 Percent Solids: 88

Work Order: **0802068**  
 Description: Laboratory Services  
 Sampled: 02/05/08 18:29  
 Sampled By: E. Vincke  
 Received: 02/06/08 14:00  
 Prepared: 02/15/08 By: BJH  
 Date Analyzed: 02/15/08 By: DJM  
 Analytical Batch: 8021833

### \*Organochlorine Pesticides by EPA Method 8081A

CAS Number	Analyte	Analytical Result	RL
319-84-6	alpha-BHC	<0.011	0.011
319-85-7	beta-BHC	<0.023	0.023
58-89-9	gamma-BHC (Lindane)	<0.023	0.023
319-86-8	delta-BHC	<0.023	0.023
5103-71-9	alpha-Chlordane	<0.034	0.034
5103-74-2	gamma-Chlordane	<0.034	0.034
72-54-8	4,4'-DDD	<0.023	0.023
72-55-9	4,4'-DDE	<0.023	0.023
50-29-3	4,4'-DDT	<0.023	0.023
309-00-2	Aldrin	<0.023	0.023
60-57-1	Dieldrin	<0.023	0.023
959-98-8	Endosulfan I	<0.023	0.023
33213-65-9	Endosulfan II	<0.023	0.023
1031-07-8	Endosulfan Sulfate	<0.023	0.023
72-20-8	Endrin	<0.023	0.023
7421-93-4	Endrin Aldehyde	<0.023	0.023
53494-70-5	Endrin Ketone	<0.023	0.023
76-44-8	Heptachlor	<0.023	0.023
1024-57-3	Heptachlor Epoxide	<0.023	0.023
72-43-5	Methoxychlor	<0.057	0.057
8001-35-2	Toxaphene	<0.19	0.19
<b>Surrogates</b>	<b>% Recovery</b>	<b>Control Limits</b>	
<i>Tetrachloro-m-xylene</i>	84	63-125	
<i>Decachlorobiphenyl</i>	89	58-128	

\*See Statement of Data Qualifications



## ANALYTICAL REPORT

Client: **RMT, Inc. - Grand Rapids Office**

Work Order: **0802068**

Project: Plainwell Mill

Description: Laboratory Services

Client Sample ID: **PM - Fill - D**

Sampled: 02/05/08 18:29

Lab Sample ID: **0802068-01**

Sampled By: E. Vincke

Matrix: Soil

Received: 02/06/08 14:00

Unit: mg/kg dry

Prepared: 02/11/08 By: JDM

Dilution Factor: 1

Date Analyzed: 02/11/08 By: JDM

QC Batch: 0801494

Analytical Batch: 8021211

Percent Solids: 88

### Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	<1.1	1.1
107-13-1	Acrylonitrile	<0.11	0.11
71-43-2	Benzene	<0.057	0.057
108-86-1	Bromobenzene	<0.11	0.11
74-97-5	Bromochloromethane	<0.11	0.11
75-27-4	Bromodichloromethane	<0.11	0.11
75-25-2	Bromoform	<0.11	0.11
74-83-9	Bromomethane	<0.23	0.23
104-51-8	n-Butylbenzene	<0.057	0.057
135-98-8	sec-Butylbenzene	<0.057	0.057
98-06-6	tert-Butylbenzene	<0.057	0.057
75-15-0	Carbon Disulfide	<0.28	0.28
56-23-5	Carbon Tetrachloride	<0.057	0.057
108-90-7	Chlorobenzene	<0.057	0.057
75-00-3	Chloroethane	<0.28	0.28
67-66-3	Chloroform	<0.057	0.057
74-87-3	Chloromethane	<0.28	0.28
96-12-8	1,2-Dibromo-3-chloropropane	<0.057	0.057
124-48-1	Dibromochloromethane	<0.11	0.11
106-93-4	1,2-Dibromoethane	<0.057	0.057
74-95-3	Dibromomethane	<0.28	0.28
110-57-6	trans-1,4-Dichloro-2-butene	<0.057	0.057
95-50-1	1,2-Dichlorobenzene	<0.11	0.11
541-73-1	1,3-Dichlorobenzene	<0.11	0.11
106-46-7	1,4-Dichlorobenzene	<0.11	0.11
75-71-8	Dichlorodifluoromethane	<0.28	0.28
75-34-3	1,1-Dichloroethane	<0.057	0.057
107-06-2	1,2-Dichloroethane	<0.057	0.057
75-35-4	1,1-Dichloroethene	<0.057	0.057

Continued on next page

## ANALYTICAL REPORT

Client: <b>RMT, Inc. - Grand Rapids Office</b>	Work Order: <b>0802068</b>
Project: Plainwell Mill	Description: Laboratory Services
Client Sample ID: <b>PM - Fill - D</b>	Sampled: 02/05/08 18:29
Lab Sample ID: <b>0802068-01</b>	Sampled By: E. Vincke
Matrix: Soil	Received: 02/06/08 14:00
Unit: mg/kg dry	Prepared: 02/11/08 By: JDM
Dilution Factor: 1	Date Analyzed: 02/11/08 By: JDM
QC Batch: 0801494	Analytical Batch: 8021211
Percent Solids: 88	

### Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
156-59-2	cis-1,2-Dichloroethene	<0.057	0.057
156-60-5	trans-1,2-Dichloroethene	<0.057	0.057
78-87-5	1,2-Dichloropropane	<0.057	0.057
10061-01-5	cis-1,3-Dichloropropene	<0.057	0.057
10061-02-6	trans-1,3-Dichloropropene	<0.057	0.057
100-41-4	Ethylbenzene	<0.057	0.057
60-29-7	Ethyl Ether	<0.23	0.23
591-78-6	2-Hexanone	<2.8	2.8
74-88-4	Iodomethane	<0.11	0.11
98-82-8	Isopropylbenzene	<0.28	0.28
99-87-6	4-Isopropyltoluene	<0.11	0.11
1634-04-4	Methyl tert-Butyl Ether	<0.28	0.28
75-09-2	Methylene Chloride	<b>0.32</b>	0.11
78-93-3	2-Butanone (MEK)	<0.85	0.85
91-57-6	2-Methylnaphthalene	<0.37	0.37
108-10-1	4-Methyl-2-pentanone (MIBK)	<2.8	2.8
91-20-3	Naphthalene	<0.37	0.37
103-65-1	n-Propylbenzene	<0.11	0.11
100-42-5	Styrene	<0.057	0.057
630-20-6	1,1,1,2-Tetrachloroethane	<0.11	0.11
79-34-5	1,1,2,2-Tetrachloroethane	<0.057	0.057
127-18-4	Tetrachloroethene	<0.057	0.057
109-99-9	Tetrahydrofuran	<1.1	1.1
108-88-3	Toluene	<0.11	0.11
87-61-6	1,2,3-Trichlorobenzene	<0.37	0.37
120-82-1	1,2,4-Trichlorobenzene	<0.37	0.37
71-55-6	1,1,1-Trichloroethane	<0.057	0.057
79-00-5	1,1,2-Trichloroethane	<0.057	0.057
79-01-6	Trichloroethene	<0.057	0.057
75-69-4	Trichlorofluoromethane	<0.11	0.11
96-18-4	1,2,3-Trichloropropane	<0.11	0.11

Continued on next page

## ANALYTICAL REPORT

 Client: **RMT, Inc. - Grand Rapids Office**

 Work Order: **0802068**

Project: Plainwell Mill

Description: Laboratory Services

 Client Sample ID: **PM - Fill - D**

Sampled: 02/05/08 18:29

 Lab Sample ID: **0802068-01**

Sampled By: E. Vincke

Matrix: Soil

Received: 02/06/08 14:00

Unit: mg/kg dry

Prepared: 02/11/08 By: JDM

Dilution Factor: 1

Date Analyzed: 02/11/08 By: JDM

QC Batch: 0801494

Analytical Batch: 8021211

Percent Solids: 88

### Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
95-63-6	1,2,4-Trimethylbenzene	<0.11	0.11
108-67-8	1,3,5-Trimethylbenzene	<0.11	0.11
75-01-4	Vinyl Chloride	<0.045	0.045
136777-61-2	Xylene, Meta + Para	<0.11	0.11
95-47-6	Xylene, Ortho	<0.057	0.057
<b>Surrogates</b>		<b>% Recovery</b>	<b>Control Limits</b>
<i>Dibromofluoromethane</i>		113	78-124
<i>1,2-Dichloroethane-d4</i>		110	80-123
<i>Toluene-d8</i>		101	84-113
<i>4-Bromofluorobenzene</i>		100	79-120

## ANALYTICAL REPORT

Client: **RMT, Inc. - Grand Rapids Office**  
 Project: Plainwell Mill  
 Client Sample ID: **PM - Fill - D**  
 Lab Sample ID: **0802068-01**  
 Matrix: Soil  
 Unit: mg/kg dry  
 Dilution Factor: 1  
 QC Batch: 0801236  
 Percent Solids: 88

Work Order: **0802068**  
 Description: Laboratory Services  
 Sampled: 02/05/08 18:29  
 Sampled By: E. Vincke  
 Received: 02/06/08 14:00  
 Prepared: 02/11/08 By: ASC  
 Date Analyzed: 02/12/08 By: DMC  
 Analytical Batch: 8021276

### Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL
83-32-9	Acenaphthene	<0.37	0.37
208-96-8	Acenaphthylene	<0.37	0.37
120-12-7	Anthracene	<0.37	0.37
56-55-3	Benzo(a)anthracene	<0.37	0.37
50-32-8	Benzo(a)pyrene	<0.37	0.37
205-99-2	Benzo(b)fluoranthene	<0.37	0.37
191-24-2	Benzo(g,h,i)perylene	<0.37	0.37
207-08-9	Benzo(k)fluoranthene	<0.37	0.37
101-55-3	4-Bromophenyl Phenyl Ether	<0.37	0.37
85-68-7	Butyl Benzyl Phthalate	<0.37	0.37
86-74-8	Carbazole	<0.37	0.37
59-50-7	4-Chloro-3-methylphenol	<0.32	0.32
111-91-1	Bis(2-chloroethoxy)methane	<0.37	0.37
111-44-4	Bis(2-chloroethyl) Ether	<0.11	0.11
108-60-1	Bis(2-chloroisopropyl) Ether	<0.37	0.37
117-81-7	Bis(2-ethylhexyl) Phthalate	<0.37	0.37
91-58-7	2-Chloronaphthalene	<0.37	0.37
95-57-8	2-Chlorophenol	<0.37	0.37
7005-72-3	4-Chlorophenyl Phenyl Ether	<0.37	0.37
218-01-9	Chrysene	<0.37	0.37
53-70-3	Dibenz(a,h)anthracene	<0.37	0.37
132-64-9	Dibenzofuran	<0.37	0.37
84-74-2	Di-n-butyl Phthalate	<0.37	0.37
95-50-1	1,2-Dichlorobenzene	<0.37	0.37
541-73-1	1,3-Dichlorobenzene	<0.37	0.37
106-46-7	1,4-Dichlorobenzene	<0.37	0.37
120-83-2	2,4-Dichlorophenol	<0.37	0.37
84-66-2	Diethyl Phthalate	<0.37	0.37
105-67-9	2,4-Dimethylphenol	<0.37	0.37

Continued on next page

**ANALYTICAL REPORT**

Client: **RMT, Inc. - Grand Rapids Office**  
Project: Plainwell Mill  
Client Sample ID: **PM - Fill - D**  
Lab Sample ID: **0802068-01**  
Matrix: Soil  
Unit: mg/kg dry  
Dilution Factor: 1  
QC Batch: 0801236  
Percent Solids: 88

Work Order: **0802068**  
Description: Laboratory Services  
Sampled: 02/05/08 18:29  
Sampled By: E. Vincke  
Received: 02/06/08 14:00  
Prepared: 02/11/08 By: ASC  
Date Analyzed: 02/12/08 By: DMC  
Analytical Batch: 8021276

**Semivolatile Organic Compounds by EPA Method 8270C (Continued)**

CAS Number	Analyte	Analytical Result	RL
131-11-3	Dimethyl Phthalate	<0.37	0.37
534-52-1	4,6-Dinitro-2-methylphenol	<0.94	0.94
51-28-5	2,4-Dinitrophenol	<0.94	0.94
121-14-2	2,4-Dinitrotoluene	<0.37	0.37
606-20-2	2,6-Dinitrotoluene	<0.37	0.37
117-84-0	Di-n-octyl Phthalate	<0.37	0.37
122-66-7	1,2-Diphenylhydrazine	<0.37	0.37
206-44-0	Fluoranthene	<0.37	0.37
86-73-7	Fluorene	<0.37	0.37
118-74-1	Hexachlorobenzene	<0.37	0.37
87-68-3	Hexachlorobutadiene	<0.057	0.057
77-47-4	Hexachlorocyclopentadiene	<0.37	0.37
67-72-1	Hexachloroethane	<0.34	0.34
193-39-5	Indeno(1,2,3-cd)pyrene	<0.37	0.37
78-59-1	Isophorone	<0.37	0.37
91-57-6	2-Methylnaphthalene	<0.37	0.37
95-48-7	2-Methylphenol	<0.37	0.37
108-39-4	3+4-Methylphenol	<0.37	0.37
91-20-3	Naphthalene	<0.37	0.37
100-01-6	4-Nitroaniline	<0.37	0.37
99-09-2	3-Nitroaniline	<0.94	0.94
88-74-4	2-Nitroaniline	<0.94	0.94
98-95-3	Nitrobenzene	<0.37	0.37
100-02-7	4-Nitrophenol	<0.94	0.94
88-75-5	2-Nitrophenol	<0.37	0.37
62-75-9	N-Nitroso-dimethylamine	<0.37	0.37
86-30-6	N-Nitroso-diphenylamine	<0.37	0.37
621-64-7	N-Nitroso-di-n-propylamine	<0.37	0.37
87-86-5	Pentachlorophenol	<0.023	0.023
85-01-8	Phenanthrene	<0.37	0.37
108-95-2	Phenol	<0.37	0.37

Continued on next page

## ANALYTICAL REPORT

Client: <b>RMT, Inc. - Grand Rapids Office</b>	Work Order: <b>0802068</b>
Project: Plainwell Mill	Description: Laboratory Services
Client Sample ID: <b>PM - Fill - D</b>	Sampled: 02/05/08 18:29
Lab Sample ID: <b>0802068-01</b>	Sampled By: E. Vincke
Matrix: Soil	Received: 02/06/08 14:00
Unit: mg/kg dry	Prepared: 02/11/08 By: ASC
Dilution Factor: 1	Date Analyzed: 02/12/08 By: DMC
QC Batch: 0801236	Analytical Batch: 8021276
Percent Solids: 88	

### Semivolatile Organic Compounds by EPA Method 8270C (Continued)

CAS Number	Analyte	Analytical Result	RL
129-00-0	Pyrene	<0.37	0.37
120-82-1	1,2,4-Trichlorobenzene	<0.37	0.37
95-95-4	2,4,5-Trichlorophenol	<0.37	0.37
88-06-2	2,4,6-Trichlorophenol	<0.37	0.37
<b>Surrogates</b>		<b>% Recovery</b>	<b>Control Limits</b>
<i>2-Fluorophenol</i>		67	<i>40-105</i>
<i>Phenol-d6</i>		71	<i>44-104</i>
<i>Nitrobenzene-d5</i>		87	<i>47-118</i>
<i>2-Fluorobiphenyl</i>		78	<i>48-119</i>
<i>2,4,6-Tribromophenol</i>		80	<i>36-120</i>
<i>o-Terphenyl</i>		76	<i>45-130</i>

**ANALYTICAL REPORT**

Client: **RMT, Inc. - Grand Rapids Office**  
Project: Plainwell Mill  
Client Sample ID: **PM - Fill - D**  
Lab Sample ID: **0802068-01**  
Matrix: Soil  
Percent Solids:

Work Order: **0802068**  
Description: Laboratory Services  
Sampled: 02/05/08 18:29  
Sampled By: E. Vincke  
Received: 02/06/08 14:00

**Total Metals by EPA 6000/7000 Series Methods**

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	2.0	0.10	mg/kg dry wt.	1	USEPA-6020A	02/12/08	KLV	0801356
Barium	36	1.0	mg/kg dry wt.	1	USEPA-6020A	02/12/08	KLV	0801356
Cadmium	<0.20	0.20	mg/kg dry wt.	1	USEPA-6020A	02/12/08	KLV	0801356
Chromium	6.6	2.0	mg/kg dry wt.	1	USEPA-6020A	02/12/08	KLV	0801356
Lead	6.6	1.0	mg/kg dry wt.	1	USEPA-6020A	02/12/08	KLV	0801356
Mercury	<0.050	0.050	mg/kg dry wt.	1	USEPA-7471A	02/12/08	DSC	0801411
Selenium	<0.20	0.20	mg/kg dry wt.	1	USEPA-6020A	02/12/08	KLV	0801356
Silver	<0.10	0.10	mg/kg dry wt.	1	USEPA-6020A	02/12/08	KLV	0801356

**ANALYTICAL REPORT**

Client: **RMT, Inc. - Grand Rapids Office**  
Project: Plainwell Mill  
Client Sample ID: **PM - Fill - D**  
Lab Sample ID: **0802068-01**  
Matrix: Soil

Work Order: **0802068**  
Description: Laboratory Services  
Sampled: 02/05/08 18:29  
Sampled By: E. Vincke  
Received: 02/06/08 14:00

**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
SGT-HEM; Nonpolar Material	<450	450	mg/kg dry	1	USEPA-9071B	02/11/08	CLB	0801453
Percent Solids	<b>88</b>	0.1	%	1	USEPA-3550B	02/08/08	KNC	0801361



## ANALYTICAL REPORT

Client: **RMT, Inc. - Grand Rapids Office**  
 Project: Plainwell Mill  
 Client Sample ID: **PM - Fill - D**  
 Lab Sample ID: **0802068-01RE1**  
 Matrix: Soil  
 Unit: mg/kg dry  
 Dilution Factor: 1  
 QC Batch: 0801259  
 Percent Solids: 88

Work Order: **0802068**  
 Description: Laboratory Services  
 Sampled: 02/05/08 18:29  
 Sampled By: E. Vincke  
 Received: 02/06/08 14:00  
 Prepared: 02/19/08 By: ASC  
 Date Analyzed: 02/22/08 By: DJM  
 Analytical Batch: 8022232

### Organochlorine Pesticides by EPA Method 8081A

CAS Number	Analyte	Analytical Result	RL
319-84-6	alpha-BHC	<0.011	0.011
319-85-7	beta-BHC	<0.023	0.023
58-89-9	gamma-BHC (Lindane)	<0.023	0.023
319-86-8	delta-BHC	<0.023	0.023
5103-71-9	alpha-Chlordane	<0.034	0.034
5103-74-2	gamma-Chlordane	<0.034	0.034
72-54-8	4,4'-DDD	<0.023	0.023
72-55-9	4,4'-DDE	<0.023	0.023
50-29-3	4,4'-DDT	<0.023	0.023
309-00-2	Aldrin	<0.023	0.023
60-57-1	Dieldrin	<0.023	0.023
959-98-8	Endosulfan I	<0.023	0.023
33213-65-9	Endosulfan II	<0.023	0.023
1031-07-8	Endosulfan Sulfate	<0.023	0.023
72-20-8	Endrin	<0.023	0.023
7421-93-4	Endrin Aldehyde	<0.023	0.023
53494-70-5	Endrin Ketone	<0.023	0.023
76-44-8	Heptachlor	<0.023	0.023
1024-57-3	Heptachlor Epoxide	<0.023	0.023
72-43-5	Methoxychlor	<0.057	0.057
8001-35-2	Toxaphene	<0.19	0.19
<b>Surrogates</b>	<b>% Recovery</b>	<b>Control Limits</b>	
<i>Tetrachloro-m-xylene</i>	93	63-125	
<i>Decachlorobiphenyl</i>	87	58-128	

## QUALITY CONTROL REPORT

### Extractable Petroleum Hydrocarbons by EPA Method 8015B (Modified)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
<b>QC Batch: 0801287</b> 3550B Sonication Extraction/USEPA-8015B								
<b>Method Blank</b>						Analyzed:	02/14/2008	By: JMK
Unit: mg/kg wet						Analytical Batch:	8021544	
DRO - 8015B (C10-C28)			<6.7					6.7
<b>Surrogates</b>								
<i>o</i> -Terphenyl				48	44-137			
<b>Laboratory Control Sample</b>						Analyzed:	02/14/2008	By: JMK
Unit: mg/kg wet						Analytical Batch:	8021544	
DRO - 8015B (C10-C28)		33.3	29.5	89	44-135			6.7
<b>Surrogates</b>								
<i>o</i> -Terphenyl				58	44-137			

## QUALITY CONTROL REPORT

### Volatile Petroleum Hydrocarbons by EPA Method 8015B (Modified)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
<b>QC Batch: 0801715</b> 5030B Aqueous Purge & Trap/USEPA-8015B								
<b>Method Blank</b>						Analyzed:	02/14/2008	By: LEW
Unit: mg/kg wet						Analytical Batch:	8021508	
GRO - 8015B (C6-C10)			<5.0					5.0
<b>Method Blank</b>						Analyzed:	02/14/2008	By: LEW
Unit: ug/L						Analytical Batch:	8021508	
<i>Surrogates</i>								
aaa-Trifluorotoluene				95	76-113			
<b>Laboratory Control Sample</b>						Analyzed:	02/14/2008	By: LEW
Unit: mg/kg wet						Analytical Batch:	8021508	
GRO - 8015B (C6-C10)		20.0	20.4	102	72-118			5.0
<b>Laboratory Control Sample</b>						Analyzed:	02/14/2008	By: LEW
Unit: ug/L						Analytical Batch:	8021508	
<i>Surrogates</i>								
aaa-Trifluorotoluene				102	76-113			
<b>Matrix Spike 0802068-01</b> PM - Fill - D						Analyzed:	02/14/2008	By: LEW
Unit: mg/kg dry						Analytical Batch:	8021508	
GRO - 8015B (C6-C10)	<5.7	22.6	26.1	115	30-168			5.7
<b>Matrix Spike 0802068-01</b> PM - Fill - D						Analyzed:	02/14/2008	By: LEW
Unit: ug/L						Analytical Batch:	8021508	
<i>Surrogates</i>								
aaa-Trifluorotoluene				103	76-113			
<b>Matrix Spike Duplicate 0802068-01</b> PM - Fill - D						Analyzed:	02/14/2008	By: LEW
Unit: mg/kg dry						Analytical Batch:	8021508	
GRO - 8015B (C6-C10)	<5.7	22.6	26.3	116	30-168	0.6	20	5.7
<b>Matrix Spike Duplicate 0802068-01</b> PM - Fill - D						Analyzed:	02/14/2008	By: LEW
Unit: ug/L						Analytical Batch:	8021508	
<i>Surrogates</i>								
aaa-Trifluorotoluene				102	76-113			

## QUALITY CONTROL REPORT

### Polychlorinated Biphenyls (PCBs) by EPA Method 8082

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
<b>QC Batch: 0801710</b> 3550B Sonication Extraction/USEPA-8082								
<b>Method Blank</b>						Analyzed:	02/18/2008	By: JMK
Unit: mg/kg wet						Analytical Batch:	8021934	
PCB-1016			<0.33					0.33
PCB-1221			<0.33					0.33
PCB-1232			<0.33					0.33
PCB-1242			<0.33					0.33
PCB-1248			<0.33					0.33
PCB-1254			<0.33					0.33
PCB-1260			<0.33					0.33
<b>Surrogates</b>								
Decachlorobiphenyl				102	36-136			
Tetrachloro-m-xylene				98	46-120			
<b>Laboratory Control Sample</b>						Analyzed:	02/18/2008	By: JMK
Unit: mg/kg wet						Analytical Batch:	8021934	
PCB-1016		0.167	<b>0.168</b>	101	72-117			0.33
PCB-1260		0.167	<b>0.187</b>	112	77-123			0.33
<b>Surrogates</b>								
Decachlorobiphenyl				101	36-136			
Tetrachloro-m-xylene				100	46-120			
<b>Matrix Spike 0802068-01 PM - Fill - D</b>						Analyzed:	02/18/2008	By: JMK
Unit: mg/kg dry						Analytical Batch:	8021934	
PCB-1016	<0.37	0.188	<b>0.184</b>	98	48-126			0.37
PCB-1260	<0.37	0.188	<b>0.206</b>	109	52-136			0.37
<b>Surrogates</b>								
Decachlorobiphenyl				97	36-136			
Tetrachloro-m-xylene				92	46-120			
<b>Matrix Spike Duplicate 0802068-01 PM - Fill - D</b>						Analyzed:	02/18/2008	By: JMK
Unit: mg/kg dry						Analytical Batch:	8021934	
PCB-1016	<0.37	0.188	<b>0.188</b>	100	48-126	2	20	0.37
PCB-1260	<0.37	0.188	<b>0.207</b>	110	52-136	0.5	20	0.37
<b>Surrogates</b>								
Decachlorobiphenyl				94	36-136			
Tetrachloro-m-xylene				92	46-120			

## QUALITY CONTROL REPORT

### Organochlorine Pesticides by EPA Method 8081A

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801259** 3550B Sonication Extraction/USEPA-8081A

**Method Blank**

Unit: mg/kg wet

Analyzed: 02/15/2008 By: DJM  
 Analytical Batch: 8021833

alpha-BHC	<0.010	0.010
beta-BHC	<0.020	0.020
gamma-BHC (Lindane)	<0.020	0.020
delta-BHC	<0.020	0.020
alpha-Chlordane	<0.030	0.030
gamma-Chlordane	<0.030	0.030
4,4'-DDD	<0.020	0.020
4,4'-DDE	<0.020	0.020
4,4'-DDT	<0.020	0.020
Aldrin	<0.020	0.020
Dieldrin	<0.020	0.020
Endosulfan I	<0.020	0.020
Endosulfan II	<0.020	0.020
Endosulfan Sulfate	<0.020	0.020
Endrin	<0.020	0.020
Endrin Aldehyde	<0.020	0.020
Endrin Ketone	<0.020	0.020
Heptachlor	<0.020	0.020
Heptachlor Epoxide	<0.020	0.020
Methoxychlor	<0.050	0.050
Toxaphene	<0.17	0.17

**Surrogates**

<i>Tetrachloro-m-xylene</i>	92	63-125
<i>Decachlorobiphenyl</i>	93	58-128

**Method Blank**

Unit: mg/kg wet

Analyzed: 02/22/2008 By: DJM  
 Analytical Batch: 8022232

alpha-BHC	<0.010	0.010
beta-BHC	<0.020	0.020
gamma-BHC (Lindane)	<0.020	0.020
delta-BHC	<0.020	0.020
alpha-Chlordane	<0.030	0.030
gamma-Chlordane	<0.030	0.030
4,4'-DDD	<0.020	0.020
4,4'-DDE	<0.020	0.020
4,4'-DDT	<0.020	0.020

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## QUALITY CONTROL REPORT

### Organochlorine Pesticides by EPA Method 8081A (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801259 (Continued)** 3550B Sonication Extraction/USEPA-8081A

#### Method Blank (Continued)

Unit: mg/kg wet

Analyzed: 02/22/2008 By: DJM  
 Analytical Batch: 8022232

Aldrin			<0.020				0.020	
Dieldrin			<0.020				0.020	
Endosulfan I			<0.020				0.020	
Endosulfan II			<0.020				0.020	
Endosulfan Sulfate			<0.020				0.020	
Endrin			<0.020				0.020	
Endrin Aldehyde			<0.020				0.020	
Endrin Ketone			<0.020				0.020	
Heptachlor			<0.020				0.020	
Heptachlor Epoxide			<0.020				0.020	
Methoxychlor			<0.050				0.050	
Toxaphene			<0.17				0.17	

#### Surrogates

Tetrachloro-m-xylene	92	63-125
Decachlorobiphenyl	92	58-128

#### Laboratory Control Sample

Unit: mg/kg wet

Analyzed: 02/15/2008 By: DJM  
 Analytical Batch: 8021833

*alpha-BHC	0.0133	<b>0.00973</b>	<b>73</b>	78-131	0.010
*beta-BHC	0.0133	<b>0.0102</b>	<b>77</b>	84-138	0.020
*gamma-BHC (Lindane)	0.0133	<b>0.0102</b>	<b>77</b>	80-135	0.020
*delta-BHC	0.0133	<b>0.0103</b>	<b>77</b>	80-136	0.020
*alpha-Chlordane	0.0133	<b>0.0102</b>	<b>76</b>	80-138	0.030
*gamma-Chlordane	0.0133	<b>0.00980</b>	<b>74</b>	79-137	0.030
4,4'-DDD	0.0133	<b>0.00980</b>	<b>74</b>	74-141	0.020
*4,4'-DDE	0.0133	<b>0.00960</b>	<b>72</b>	78-138	0.020
*4,4'-DDT	0.0133	<b>0.00953</b>	<b>72</b>	74-141	0.020
*Aldrin	0.0133	<b>0.0102</b>	<b>77</b>	80-135	0.020
*Dieldrin	0.0133	<b>0.0100</b>	<b>75</b>	79-139	0.020
Endosulfan I	0.0133	<b>0.00893</b>	67	58-131	0.020
Endosulfan II	0.0133	<b>0.00947</b>	71	62-137	0.020
Endosulfan Sulfate	0.0133	<b>0.0105</b>	79	79-141	0.020
Endrin	0.0133	<b>0.0103</b>	78	67-151	0.020
Endrin Aldehyde	0.0133	<b>0.0102</b>	77	68-132	0.020
*Endrin Ketone	0.0133	<b>0.0101</b>	<b>76</b>	78-140	0.020
*Heptachlor	0.0133	<b>0.0103</b>	<b>77</b>	82-135	0.020

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\*See Statement of Data Qualifications

## QUALITY CONTROL REPORT

### Organochlorine Pesticides by EPA Method 8081A (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801259 (Continued)** 3550B Sonication Extraction/USEPA-8081A

**Laboratory Control Sample (Continued)**

Unit: mg/kg wet

Analyzed: 02/15/2008 By: DJM

Analytical Batch: 8021833

*Heptachlor Epoxide	0.0133	<b>0.00990</b>	<b>74</b>	81-137	0.020
*Methoxychlor	0.0133	<b>0.0100</b>	<b>75</b>	76-142	0.050

**Surrogates**

<i>Tetrachloro-m-xylene</i>	68	63-125
<i>Decachlorobiphenyl</i>	67	58-128

**Laboratory Control Sample**

Unit: mg/kg wet

Analyzed: 02/22/2008 By: DJM

Analytical Batch: 8022232

alpha-BHC	0.0133	<b>0.0146</b>	110	78-131	0.010
beta-BHC	0.0133	<b>0.0142</b>	106	84-138	0.020
gamma-BHC (Lindane)	0.0133	<b>0.0149</b>	112	80-135	0.020
delta-BHC	0.0133	<b>0.0144</b>	108	80-136	0.020
alpha-Chlordane	0.0133	<b>0.0140</b>	105	80-138	0.030
gamma-Chlordane	0.0133	<b>0.0141</b>	106	79-137	0.030
4,4'-DDD	0.0133	<b>0.0141</b>	106	74-141	0.020
4,4'-DDE	0.0133	<b>0.0143</b>	107	78-138	0.020
4,4'-DDT	0.0133	<b>0.0138</b>	104	74-141	0.020
Aldrin	0.0133	<b>0.0138</b>	104	80-135	0.020
Dieldrin	0.0133	<b>0.0145</b>	109	79-139	0.020
Endosulfan I	0.0133	<b>0.0127</b>	95	58-131	0.020
Endosulfan II	0.0133	<b>0.0128</b>	96	62-137	0.020
Endosulfan Sulfate	0.0133	<b>0.0136</b>	102	79-141	0.020
Endrin	0.0133	<b>0.0147</b>	110	67-151	0.020
Endrin Aldehyde	0.0133	<b>0.0135</b>	101	68-132	0.020
Endrin Ketone	0.0133	<b>0.0134</b>	101	78-140	0.020
Heptachlor	0.0133	<b>0.0145</b>	109	82-135	0.020
Heptachlor Epoxide	0.0133	<b>0.0142</b>	106	81-137	0.020
Methoxychlor	0.0133	<b>0.0136</b>	102	76-142	0.050

**Surrogates**

<i>Tetrachloro-m-xylene</i>	97	63-125
<i>Decachlorobiphenyl</i>	91	58-128

\*See Statement of Data Qualifications

## QUALITY CONTROL REPORT

### Volatile Organic Compounds by EPA Method 8260B

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801494** 5035 Soil Purge & Trap - MS/USEPA-8260B

**Method Blank**

Unit: mg/kg wet

Analyzed: 02/11/2008 By: JDM  
 Analytical Batch: 8021211

Acetone	<1.0	1.0
Acrylonitrile	<0.10	0.10
Benzene	<0.050	0.050
Bromobenzene	<0.10	0.10
Bromochloromethane	<0.10	0.10
Bromodichloromethane	<0.10	0.10
Bromoform	<0.10	0.10
Bromomethane	<0.20	0.20
n-Butylbenzene	<0.050	0.050
sec-Butylbenzene	<0.050	0.050
tert-Butylbenzene	<0.050	0.050
Carbon Disulfide	<0.25	0.25
Carbon Tetrachloride	<0.050	0.050
Chlorobenzene	<0.050	0.050
Chloroethane	<0.25	0.25
Chloroform	<0.050	0.050
Chloromethane	<0.25	0.25
1,2-Dibromo-3-chloropropane	<0.050	0.050
Dibromochloromethane	<0.10	0.10
1,2-Dibromoethane	<0.050	0.050
Dibromomethane	<0.25	0.25
trans-1,4-Dichloro-2-butene	<0.050	0.050
1,2-Dichlorobenzene	<0.10	0.10
1,3-Dichlorobenzene	<0.10	0.10
1,4-Dichlorobenzene	<0.10	0.10
Dichlorodifluoromethane	<0.25	0.25
1,1-Dichloroethane	<0.050	0.050
1,2-Dichloroethane	<0.050	0.050
1,1-Dichloroethene	<0.050	0.050
cis-1,2-Dichloroethene	<0.050	0.050
trans-1,2-Dichloroethene	<0.050	0.050
1,2-Dichloropropane	<0.050	0.050
cis-1,3-Dichloropropene	<0.050	0.050
trans-1,3-Dichloropropene	<0.050	0.050
Ethylbenzene	<0.050	0.050
Ethyl Ether	<0.20	0.20

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## QUALITY CONTROL REPORT

### Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801494 (Continued)** 5035 Soil Purge & Trap - MS/USEPA-8260B

#### Method Blank (Continued)

Unit: mg/kg wet

Analyzed: 02/11/2008 By: JDM  
 Analytical Batch: 8021211

2-Hexanone	<2.5	2.5
Iodomethane	<0.10	0.10
Isopropylbenzene	<0.25	0.25
4-Isopropyltoluene	<0.10	0.10
Methyl tert-Butyl Ether	<0.25	0.25
Methylene Chloride	<0.10	0.10
2-Butanone (MEK)	<0.75	0.75
2-Methylnaphthalene	<0.33	0.33
4-Methyl-2-pentanone (MIBK)	<2.5	2.5
Naphthalene	<0.33	0.33
n-Propylbenzene	<0.10	0.10
Styrene	<0.050	0.050
1,1,1,2-Tetrachloroethane	<0.10	0.10
1,1,1,2-Tetrachloroethane	<0.050	0.050
Tetrachloroethene	<0.050	0.050
Tetrahydrofuran	<1.0	1.0
Toluene	<0.10	0.10
1,2,3-Trichlorobenzene	<0.33	0.33
1,2,4-Trichlorobenzene	<0.33	0.33
1,1,1-Trichloroethane	<0.050	0.050
1,1,2-Trichloroethane	<0.050	0.050
Trichloroethene	<0.050	0.050
Trichlorofluoromethane	<0.10	0.10
1,2,3-Trichloropropane	<0.10	0.10
1,2,4-Trimethylbenzene	<0.10	0.10
1,3,5-Trimethylbenzene	<0.10	0.10
Vinyl Chloride	<0.040	0.040
Xylene, Meta + Para	<0.10	0.10
Xylene, Ortho	<0.050	0.050

#### Method Blank

Unit: ug/L

Analyzed: 02/11/2008 By: JDM  
 Analytical Batch: 8021211

#### Surrogates

Dibromofluoromethane	107	78-124
1,2-Dichloroethane-d4	104	80-123
Toluene-d8	100	84-113

Continued on next page

## QUALITY CONTROL REPORT

### Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801494 (Continued)** 5035 Soil Purge & Trap - MS/USEPA-8260B

**Method Blank (Continued)**

Unit: ug/L

Analyzed: 02/11/2008 By: JDM

Analytical Batch: 8021211

**Surrogates (Continued)**

4-Bromofluorobenzene

105 79-120

**Laboratory Control Sample**

Unit: mg/kg wet

Analyzed: 02/11/2008 By: JDM

Analytical Batch: 8021211

Benzene	2.00	<b>2.01</b>	100	82-122	0.050
Chlorobenzene	2.00	<b>2.08</b>	104	82-118	0.050
1,1-Dichloroethene	2.00	<b>1.69</b>	84	72-131	0.050
Toluene	2.00	<b>2.04</b>	102	82-125	0.10
Trichloroethene	2.00	<b>2.12</b>	106	81-127	0.050

**Laboratory Control Sample**

Unit: ug/L

Analyzed: 02/11/2008 By: JDM

Analytical Batch: 8021211

**Surrogates**

Dibromofluoromethane

103 78-124

1,2-Dichloroethane-d4

106 80-123

Toluene-d8

104 84-113

4-Bromofluorobenzene

118 79-120

## QUALITY CONTROL REPORT

### Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801236** 3550B Sonication Extraction/USEPA-8270C

**Method Blank**

Unit: mg/kg wet

Analyzed: 02/12/2008 By: DMC

Analytical Batch: 8021276

Acenaphthene	<0.33	0.33
Acenaphthylene	<0.33	0.33
Anthracene	<0.33	0.33
Benzo(a)anthracene	<0.33	0.33
Benzo(a)pyrene	<0.33	0.33
Benzo(b)fluoranthene	<0.33	0.33
Benzo(g,h,i)perylene	<0.33	0.33
Benzo(k)fluoranthene	<0.33	0.33
4-Bromophenyl Phenyl Ether	<0.33	0.33
Butyl Benzyl Phthalate	<0.33	0.33
Carbazole	<0.33	0.33
4-Chloro-3-methylphenol	<0.28	0.28
Bis(2-chloroethoxy)methane	<0.33	0.33
Bis(2-chloroethyl) Ether	<0.10	0.10
Bis(2-chloroisopropyl) Ether	<0.33	0.33
Bis(2-ethylhexyl) Phthalate	<0.33	0.33
2-Chloronaphthalene	<0.33	0.33
2-Chlorophenol	<0.33	0.33
4-Chlorophenyl Phenyl Ether	<0.33	0.33
Chrysene	<0.33	0.33
Dibenz(a,h)anthracene	<0.33	0.33
Dibenzofuran	<0.33	0.33
Di-n-butyl Phthalate	<0.33	0.33
1,2-Dichlorobenzene	<0.33	0.33
1,3-Dichlorobenzene	<0.33	0.33
1,4-Dichlorobenzene	<0.33	0.33
2,4-Dichlorophenol	<0.33	0.33
Diethyl Phthalate	<0.33	0.33
2,4-Dimethylphenol	<0.33	0.33
Dimethyl Phthalate	<0.33	0.33
4,6-Dinitro-2-methylphenol	<0.83	0.83
2,4-Dinitrophenol	<0.83	0.83
2,4-Dinitrotoluene	<0.33	0.33
2,6-Dinitrotoluene	<0.33	0.33
Di-n-octyl Phthalate	<0.33	0.33
1,2-Diphenylhydrazine	<0.33	0.33

Continued on next page

## QUALITY CONTROL REPORT

### Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801236 (Continued)** 3550B Sonication Extraction/USEPA-8270C

#### Method Blank (Continued)

Unit: mg/kg wet

Analyzed: 02/12/2008 By: DMC

Analytical Batch: 8021276

Fluoranthene	<0.33	0.33
Fluorene	<0.33	0.33
Hexachlorobenzene	<0.33	0.33
Hexachlorobutadiene	<0.050	0.050
Hexachlorocyclopentadiene	<0.33	0.33
Hexachloroethane	<0.30	0.30
Indeno(1,2,3-cd)pyrene	<0.33	0.33
Isophorone	<0.33	0.33
2-Methylnaphthalene	<0.33	0.33
2-Methylphenol	<0.33	0.33
3+4-Methylphenol	<0.33	0.33
Naphthalene	<0.33	0.33
4-Nitroaniline	<0.33	0.33
3-Nitroaniline	<0.83	0.83
2-Nitroaniline	<0.83	0.83
Nitrobenzene	<0.33	0.33
4-Nitrophenol	<0.83	0.83
2-Nitrophenol	<0.33	0.33
N-Nitroso-dimethylamine	<0.33	0.33
N-Nitroso-diphenylamine	<0.33	0.33
N-Nitroso-di-n-propylamine	<0.33	0.33
Pentachlorophenol	<0.020	0.020
Phenanthrene	<0.33	0.33
Phenol	<0.33	0.33
Pyrene	<0.33	0.33
1,2,4-Trichlorobenzene	<0.33	0.33
2,4,5-Trichlorophenol	<0.33	0.33
2,4,6-Trichlorophenol	<0.33	0.33

#### Surrogates

2-Fluorophenol	75	40-105
Phenol-d6	79	44-104
Nitrobenzene-d5	95	47-118
2-Fluorobiphenyl	88	48-119
2,4,6-Tribromophenol	83	36-120
o-Terphenyl	80	45-130

#### Laboratory Control Sample

Unit: mg/kg wet

Analyzed: 02/12/2008 By: DMC

Analytical Batch: 8021276

Acenaphthene	0.333	0.225	68	60-120	0.33
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Continued on next page

## QUALITY CONTROL REPORT

### Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**QC Batch: 0801236 (Continued)** 3550B Sonication Extraction/USEPA-8270C

#### Laboratory Control Sample (Continued)

Unit: mg/kg wet

Analyzed: 02/12/2008 By: DMC

Analytical Batch: 8021276

4-Chloro-3-methylphenol	0.500	<b>0.398</b>	80	57-124	0.28
2-Chlorophenol	0.500	<b>0.470</b>	94	62-118	0.33
1,4-Dichlorobenzene	0.333	<b>0.285</b>	86	61-111	0.33
2,4-Dinitrotoluene	0.333	<b>0.294</b>	88	51-128	0.33
Naphthalene	0.333	<b>0.300</b>	90	52-128	0.33
4-Nitrophenol	0.500	<b>0.386</b>	77	36-131	0.83
N-Nitroso-di-n-propylamine	0.333	<b>0.278</b>	83	54-115	0.33
Pentachlorophenol	0.500	<b>0.243</b>	49	19-117	0.020
Phenol	0.500	<b>0.403</b>	81	53-120	0.33
Pyrene	0.333	<b>0.280</b>	84	60-132	0.33
1,2,4-Trichlorobenzene	0.333	<b>0.296</b>	89	57-122	0.33

#### Surrogates

2-Fluorophenol	79	40-105
Phenol-d6	81	44-104
Nitrobenzene-d5	95	47-118
2-Fluorobiphenyl	92	48-119
2,4,6-Tribromophenol	86	36-120
o-Terphenyl	88	45-130

## QUALITY CONTROL REPORT

### Total Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**Analyte: Arsenic/USEPA-6020A**

QC Batch: 0801356 (3050B Digestion)

Analyzed: 02/12/2008 By: KLV

Method Blank			<0.10	mg/kg dry wt.					0.10
Laboratory Control Sample		20.0	<b>20.0</b>	mg/kg dry wt.	100	82-116			0.10
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	1.98	20.0	<b>20.7</b>	mg/kg dry wt.	94	65-125			0.10
Matrix Spike Duplicate	1.98	20.0	<b>21.1</b>	mg/kg dry wt.	96	65-125	2	20	0.10

**Analyte: Barium/USEPA-6020A**

QC Batch: 0801356 (3050B Digestion)

Analyzed: 02/12/2008 By: KLV

Method Blank			<0.10	mg/kg dry wt.					0.10
Laboratory Control Sample		20.0	<b>20.5</b>	mg/kg dry wt.	102	86-118			0.10
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	35.6	20.0	<b>56.9</b>	mg/kg dry wt.	107	64-134			0.20
Matrix Spike Duplicate	35.6	20.0	<b>60.4</b>	mg/kg dry wt.	124	64-134	6	20	0.20

**Analyte: Cadmium/USEPA-6020A**

QC Batch: 0801356 (3050B Digestion)

Analyzed: 02/12/2008 By: KLV

Method Blank			<0.050	mg/kg dry wt.					0.050
Laboratory Control Sample		20.0	<b>19.2</b>	mg/kg dry wt.	96	83-113			0.050
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	0.0670	20.0	<b>19.8</b>	mg/kg dry wt.	99	84-119			0.050
Matrix Spike Duplicate	0.0670	20.0	<b>20.1</b>	mg/kg dry wt.	100	84-119	2	20	0.050

**Analyte: Chromium/USEPA-6020A**

QC Batch: 0801356 (3050B Digestion)

Analyzed: 02/12/2008 By: KLV

Method Blank			<0.10	mg/kg dry wt.					0.10
Laboratory Control Sample		20.0	<b>20.0</b>	mg/kg dry wt.	100	87-118			0.10
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	6.64	20.0	<b>25.3</b>	mg/kg dry wt.	93	63-134			0.10
Matrix Spike Duplicate	6.64	20.0	<b>26.8</b>	mg/kg dry wt.	101	63-134	6	20	0.10

**Analyte: Lead/USEPA-6020A**

QC Batch: 0801356 (3050B Digestion)

Analyzed: 02/12/2008 By: KLV

Method Blank			<0.10	mg/kg dry wt.					0.10
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Continued on next page



## QUALITY CONTROL REPORT

### Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**Analyte: Lead/USEPA-6020A (Continued)**

QC Batch: 0801356 (Continued) (3050B Digestion) Analyzed: 02/12/2008 By: KLV

Laboratory Control Sample		20.0	<b>20.7</b>	mg/kg dry wt.	104	82-118			0.10
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	6.63	20.0	<b>27.2</b>	mg/kg dry wt.	103	69-129			0.10
Matrix Spike Duplicate	6.63	20.0	<b>27.7</b>	mg/kg dry wt.	106	69-129	2	20	0.10

**Analyte: Mercury/USEPA-7471A**

QC Batch: 0801411 (7471A Mercury Digestion) Analyzed: 02/12/2008 By: DSC

Method Blank			<0.050	mg/kg dry wt.					0.050
Laboratory Control Sample		0.333	<b>0.327</b>	mg/kg dry wt.	98	76-122			0.050
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	0.0148	0.333	<b>0.352</b>	mg/kg dry wt.	101	71-123			0.050
Matrix Spike Duplicate	0.0148	0.333	<b>0.352</b>	mg/kg dry wt.	101	71-123	0.1	20	0.050

**Analyte: Selenium/USEPA-6020A**

QC Batch: 0801356 (3050B Digestion) Analyzed: 02/12/2008 By: KLV

Method Blank			<0.10	mg/kg dry wt.					0.10
Laboratory Control Sample		20.0	<b>19.5</b>	mg/kg dry wt.	97	73-117			0.10
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	<0.10	20.0	<b>18.0</b>	mg/kg dry wt.	90	58-123			0.10
Matrix Spike Duplicate	<0.10	20.0	<b>17.6</b>	mg/kg dry wt.	88	58-123	2	20	0.10

**Analyte: Silver/USEPA-6020A**

QC Batch: 0801356 (3050B Digestion) Analyzed: 02/12/2008 By: KLV

Method Blank			<0.10	mg/kg dry wt.					0.10
Laboratory Control Sample		20.0	<b>19.4</b>	mg/kg dry wt.	97	90-112			0.10
<b>0802068-01 PM - Fill - D</b>									
Matrix Spike	0.0295	20.0	<b>19.1</b>	mg/kg dry wt.	95	76-119			0.10
Matrix Spike Duplicate	0.0295	20.0	<b>19.1</b>	mg/kg dry wt.	95	76-119	0.2	20	0.10

## QUALITY CONTROL REPORT

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
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**Analyte: Percent Solids/USEPA-3550B**

QC Batch: 0801361 (General Inorganic Prep) Analyzed: 02/08/2008 By: KNC

Method Blank <0.1 % 0.1

**0802068-01 PM - Fill - D**

Duplicate 88 89 % 0.07 20 0.1

**Analyte: SGT-HEM; Nonpolar Material/USEPA-9071B**

QC Batch: 0801453 (Method-Specific Preparation) Analyzed: 02/11/2008 By: CLB

Method Blank <400 mg/kg wet 400

Laboratory Control Sample 2000 1820 mg/kg wet 91 64-132 400

**0802068-01 PM - Fill - D**

Duplicate <450 <450 mg/kg dry 24 450

**STATEMENT OF DATA QUALIFICATIONS****Organochlorine Pesticides by EPA Method 8081A**

**Qualification:** The LCS recovery was less than the lower control limit but greater than or equal to 10%. A positive result for this analyte in the associated QC batch is considered estimated; a non-detect result for the same analyte is considered as approximate.

**Analysis:** USEPA-8081A

0801259-BS4	4,4'-DDE
0801259-BS4	4,4'-DDT
0801259-BS4	Aldrin
0801259-BS4	alpha-BHC
0801259-BS4	alpha-Chlordane
0801259-BS4	beta-BHC
0801259-BS4	delta-BHC
0801259-BS4	Dieldrin
0801259-BS4	Endrin Ketone
0801259-BS4	gamma-BHC (Lindane)
0801259-BS4	gamma-Chlordane
0801259-BS4	Heptachlor
0801259-BS4	Heptachlor Epoxide
0801259-BS4	Methoxychlor

**Qualification:** This sample was re-extracted due to low recoveries in the associated Blank Spike. The re-extraction was performed within the holding time. Both sets of results are reported.

**Analysis:** USEPA-8081A

**Sample/Analyte:** 0802068-01 PM - Fill - D



**TriMatrix**  
Laboratories, Inc.

5560 Corporate Exchange Court SE Grand Rapids, MI 49512  
Phone (616) 975-4300 Fax (616) 942-1463  
www.trimatrixlabs.com

## Chain of Custody Record

COC No. **102967**

### For Lab Use Only

Cart  
**Vd. Soil**

VOA Rack/Tray

Receipt Log No.

**47-14**

Project Chemist

Laboratory Project No.

**0802068**

Test Matrix Laboratory Sample  
Group Code Number

**11 01**

Client Name

**RMT, Inc**

Address

**2025 E. Beltline Ave SE  
Ste. 402  
Grand Rapids, MI 49546**

Phone

**616-975-5415**

Fax

**616-975-1098**

Project Name

**Plainwell Mill**

Client Project No. / P.O. No.

**5130.04**

Invoice To

☒ Client

☐ Other (transients)

Contact/Report To

**J. Overvorse**

### Analyses Requested

Page \_\_\_\_ of \_\_\_\_

☒ PRESERVATIVES

A NONE pH=7

B HNO<sub>3</sub> pH<2

C H<sub>2</sub>SO<sub>4</sub> pH<2

D 1+1 HCl pH<2

E NaOH pH>12

F 2+5% NaOH pH>9

G MeOH

H Other (note below)

Container Type (corresponds to Container Packing List)

Number of Containers Submitted

Sample Comments

**X X X X X**

**3**

**X**

**X**

**X**

**X**

**PM-Fill-D**

**2/5/08**

**18:29**

**X S**

Sampled By (print)

**E. Vincke**

Sampler's Signature

**E. Vincke**

Company

**RMT Inc**

How Shipped?

**Hand**

Carrier

Tracking No.

1. Received By

Date

Time

1. Received By

Date

Time

2. Received By

Date

Time

2. Received By

Date

Time

3. Received By

Date

Time

3. Received By

Date

Time

TriMatrixCOC -- COC

WHITE COPY - REPORT

YELLOW COPY - LABORATORY

PINK COPY - FIELD

# Appendix C

## Historical Data Tables

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## Plainwell Mill Banks Groundwater Data

Investigation Sampling Location Collection Date	CAS No.	RANGE OF POTENTIALLY APPLICABLE PART 201 CRITERIA	ERM Phase II					FTC&H Phase II		
			SGWK-1	SGWB-5	SGWB-6	SGWB-7	SGWG-1	TW-8	TW-9	
			4/22/1997	4/22/1997	4/22/1997	4/22/1997	4/22/1997	9/6/2006	9/6/2006	
<b>Volatile Organic Compounds</b>										
Acetone	67641	730.0 - 1.E+09	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acrylonitrile	107131	2.6 - 1.9E+05	<10	<10	<10	<10	<10	<20	<20	<20
Benzene	71432	5.0 - 35,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Bromodichloromethane	75274	80.0 - 37,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Bromoforn	75252	80.0 - 3.1E+06	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Bromobenzene	108861	18.0 - 3.9E+05	-	-	-	-	-	<1.0	<1.0	<1.0
Bromochloromethane	74975	Part 201 Not Applicable	-	-	-	-	-	<1.0	<1.0	<1.0
Bromomethane	74839	10.0 - 70,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0
n-Butylbenzene	104518	80.0 - 5,900.0	-	-	-	-	-	<1.0	<1.0	<1.0
sec-Butylbenzene	135988	80.0 - 4,400.0	-	-	-	-	-	<1.0	<1.0	<1.0
tert-Butylbenzene	98066	80.0 - 8,900.0	-	-	-	-	-	<1.0	<1.0	<1.0
2-Butanone	78933	2,200.0 - 2.4E+08	<10	<10	<10	<10	<10	-	-	-
Carbon Disulfide	75150	800.0 - 1.2E+06	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	56235	5.0 - 4,600.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Chlorobenzene (I)	108907	47.0 - 4.7E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Chlorodibromomethane	124481	80.0 - 1.1E+05	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	-
Chloroethane	75003	430.0 - 5.7E+06	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0
2-Chloroethyl vinyl ether	110758	Part 201 Not Applicable	<10	<10	<10	<10	<10	-	-	-
Chloroform	67663	80.0 - 1.8E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Chloromethane	74873	260.0 - 4.9E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0
2-Chlorotoluene	95498	150.0 - 3.7E+05	-	-	-	-	-	-	-	-
4-Chlorotoluene	106434	Part 201 Not Applicable	-	-	-	-	-	-	-	-
Dibromochloromethane	124481	80.0 - 1.1E+05	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	96128	2,00E-01 - 1,200.0	-	-	-	-	-	-	-	-
1,2-Dibromomethane	106934	5,00E-02 - 15,000.0	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	95501	16.0 - 1.6E+05	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	541731	6.6 - 2,000.0	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	106467	13.0 - 74,000.0	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	75718	1,700.0 - 3.E+05	-	-	-	-	-	-	-	-
1,1-Dichloroethane	75343	740.0 - 2.4E+06	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	107062	5.0 - 59,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	75354	7.0 - 11,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
cis 1,2-Dichloroethene	156592	70.0 - 2.1E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
trans 1,2-Dichloroethene	156605	100.0 - 2.2E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	78875	5.0 - 36,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,3-Dichloropropane	142289	Part 201 Not Applicable	-	-	-	-	-	-	-	-
cis 1,3-Dichloropropane	142289	Part 201 Not Applicable	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
trans 1,3-Dichloropropane	142289	Part 201 Not Applicable	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
2,2-Dichloropropane	594207	Part 201 Not Applicable	-	-	-	-	-	-	-	-
Di-Isopropyl-Ether	108203	30.0 - 8,000.0	-	-	-	-	-	-	-	-
Ethylbenzene	100414	18.0 - 1.7E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Hexachlorobutadiene	87683	5,00E-02 - 3,200.0	-	-	-	-	-	-	-	-
2-Hexanone	591786	1,000.0 - 8.7E+06	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0
Isopropylbenzene	98828	800.0 - 56,000.0	-	-	-	-	-	-	-	-
p-Isopropyltoluene	99876	Part 201 Not Applicable	-	-	-	-	-	-	-	-
Methylene chloride	75092	5.0 - 1.4E+06	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0
Methyl-tert-Butylether	1634044	40.0 - 4.7E+07	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	108101	1,800.0 - 2.E+07	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0
Naphthalene	91203	13.0 - 31,000.0	-	-	-	-	-	-	-	-
n-Propylbenzene	103651	80.0 - 15,000.0	-	-	-	-	-	-	-	-
Styrene	100425	80.0 - 3.1E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	79345	3.2 - 77,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Tetrachloroethene	127184	5.0 - 1.7E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<b>0.38 J</b>	<1.0	<1.0
Toluene (I)	108883	140.0 - 5.3E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<b>0.29 J</b>	<1.0	<1.0
1,2,3-Trichlorobenzene	87616	Part 201 Not Applicable	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	120821	30.0 - 3.E+05	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	71556	200.0 - 1.3E+06	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79005	5.0 - 1.1E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Trichloroethene	79016	5.0 - 97,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	75694	2,600.0 - 1.1E+06	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene	95636	17.0 - 56,000.0	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	108678	45.0 - 61,000.0	-	-	-	-	-	-	-	-
Vinyl Acetate	108054	640.0 - 8.9E+06	<2.0	<2.0	<2.0	<2.0	<2.0	-	-	-
Vinyl Chloride	75014	2.0 - 13,000.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
Total Xylene	1330207	35.0 - 1.9E+05	<2.0	<2.0	<2.0	<2.0	<2.0	<b>0.26 J</b>	<b>0.18 J</b>	<b>0.18 J</b>
<b>PAHs</b>										
Acenaphthene	83329	19.0 - 4,200.0	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acenaphthylene	208968	52.0 - 3,900.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<b>0.066 J</b>
Anthracene	120127	43.0 - 3,900.0	<4.0	<4.0	<4.0	<4.0	<4.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	56553	2.1 - 9.4	<0.01	<0.01	<0.01	<b>0.18</b>	<0.01	<1.0	<1.0	<1.0
Benzo(a)pyrene	50328	1.0 - 5.0	<0.004	<0.004	<0.004	<b>0.2</b>	<0.004	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205992	1.5 - 5.0	<0.020	<0.020	<0.020	<b>0.16</b>	<0.020	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191242	1.0 - 5.0	<0.060	<0.060	<0.060	<b>0.34</b>	<0.060	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207089	1.0 - 5.0	<0.10	<0.10	<0.10	<b>0.08</b>	<0.10	<1.0	<1.0	<1.0
Chrysene	218019	1.6 - 5.0	<0.050	<0.050	<0.050	<b>0.49</b>	<0.050	<1.0	<1.0	<1.0
Dibenzo(a,h)anthracene	53703	2.0 - 5.0	<0.020	<0.020	<0.020	<b>0.09</b>	<0.020	<2.0	<2.0	<2.0
Fluoranthene	206440	1.6 - 210.0	<1.0	<1.0	<1.0	<b>1.1</b>	<1.0	<1.0	<1.0	<b>0.060 J</b>
Fluorene	86737	12.0 - 2,000.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	193395	2.0 - 5.0	<0.40	<0.40	<0.40	<0.40	<0.40	<2.0	<2.0	<2.0
1-methyl Naphthalene	90120	Part 201 Not Applicable	<3.0	<3.0	<3.0	<3.0	<3.0	-	-	-
2-Methyl Naphthalene	91576	260.0 - 25,000.0	<3.0	<3.0	<3.0	<3.0	<3.0	<5.0	<5.0	<5.0
Naphthalene	91203	13.0 - 31,000.0	<3.0	<3.0	<3.0	<3.0	<3.0	<b>0.055 J</b>	<b>0.028 J</b>	<b>0.028 J</b>
Phenanthrene	85018	2.4 - 1,000.0	<0.30	<0.30	<0.30	<0.30	<0.30	<2.0	<2.0	<b>0.076 J</b>
Pyrene	129000	140.0 - 5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<b>0.045 J</b>
<b>Metals</b>										
Arsenic	7440382	1.00E-02 - 4.3	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Cadmium	7440439	5.00E-03 - 190.0	<0.050	<0.050	<0.050	<0.050	<0.050	<b>0.0022</b>	<b>0.0019</b>	<b>0.0019</b>
Chromium	16065831	1.00E-01 - 2.9E+05	<0.010	<0.010	<b>0.011</b>	<0.010	<0.010	<b>0.00046</b>	<b>0.00053</b>	<b>0.00053</b>
Copper	7440508	1.96E-02 - 7,400.0	<0.050	<0.050	<0.050	<0.050	<0.050	<b>0.026</b>	<b>0.022</b>	<b>0.022</b>
Lead	7439921	4.00E-03 - 7,400.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<b>0.0054</b>	<b>0.021</b>	<b>0.021</b>
Mercury	7439976	1.30E-06 - 5.60E-02	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<b>0.00021</b>	<b>0.00069</b>	<b>0.00069</b>
Selenium	7782492	5.00E-03 - 970.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.001	<0.001	<0.001
Zinc	7440666	2.4 - 1.1E+05	<0.50	<0.50	<0.50	<0.50	<0.50	<b>0.05</b>	<b>0.18</b>	<b>0.18</b>



Plainwell Mill Banks - Soil Data

Investigation		RANGE OF POTENTIALLY APPLICABLE PART 201 CRITERIA			BBL 1996		BBL 1996 - Sediment		ERM Phase II		CDM Gray Seam	Plainwell Mill Bank Emergency Response Action												
Sampling Location					SPC-1	SPI-1	SPD-1	SPC-2	SBG-1A/B	SBG-1C/D	PM 8-1	PM-SD-035	PM-SD-036	PM-SD-037	PM-SD-038	PM-SD-039	PM-SD-040	PM-SD-041	PEX-1	PEX-2	PEX-3	PEX-4	PEX-5	
Sample Depth (ft)					0.0 - 0.50	3.0 - 3.5	Sediment	Sediment	0.0 - 4.0	4.0 - 8.0	0.3 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	
Collection Date																								
Volatile Organic Compounds		CAS No.	ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	
Acetone		67641	15,000.0	-	3.9E+11	-	-	-	-	<25	<25	-	-	-	-	-	-	-	-	-	-	-	-	
Acrylonitrile		107131	100.0	-	5.8E+07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Benzene		71432	100.0	-	4.7E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Bromodichloromethane		75274	1,200.0	-	1.1E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Bromoform		75252	1,600.0	-	3.6E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Bromobenzene		108861	550.0	-	5.3E+08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bromochloromethane		74975	Part 201 Not Applicable			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bromomethane		74839	200.0	-	3.3E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
n-Butylbenzene		104518	1,600.0	-	1.E+07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
sec-Butylbenzene		135988	1,600.0	-	1.E+07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
tert-Butylbenzene		98066	1,600.0	-	1.E+07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2-Butanone		78933	44,000.0	-	6.7E+10	-	-	-	-	<10	<10	-	-	-	-	-	-	-	-	-	-	-		
Carbon Disulfide		75150	16,000.0	-	4.7E+10	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Carbon Tetrachloride		56235	100.0	-	1.7E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Chlorobenzene		108907	940.0	-	4.7E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Chlorodibromomethane		124481	1,600.0	-	1.6E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Chloroethane		75003	8,600.0	-	6.7E+11	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
2-Chloroethyl vinyl ether		110758		1.9E+06		-	-	-	-	<10	<10	-	-	-	-	-	-	-	-	-	-	-		
Chloroform		67663	1,500.0	-	1.6E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Chloromethane		74873	2,300.0	-	4.9E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
1,1-Dichloroethane		75343	15,000.0	-	3.3E+10	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
1,2-Dichloroethane		107062	100.0	-	1.5E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
1,1-Dichloroethene		75354	62.0	-	7.8E+07	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
cis 1,2-Dichloroethene		156592	1,400.0	-	2.3E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
trans 1,2-Dichloroethene		156605	2,000.0	-	4.7E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
1,2-Dichloropropane		78875	100.0	-	2.7E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
cis 1,3-Dichloropropane		142289	Part 201 Not Applicable			-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
trans 1,3-Dichloropropane		142289	Part 201 Not Applicable			-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Ethylbenzene		100414	360.0	-	1.3E+10	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
2-Hexanone		591786	20,000.0	-	2.7E+09	-	-	-	-	<10	<10	-	-	-	-	-	-	-	-	-	-	-		
Methylene chloride		75092	100.0	-	8.3E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
4-Methyl-2-pentanone		108101	36,000.0	-	1.4E+11	-	-	-	-	<10	<10	-	-	-	-	-	-	-	-	-	-	-		
Styrene		100425	2,200.0	-	6.9E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
1,1,2,2-Tetrachloroethane		79345	170.0	-	6.8E+07	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Tetrachloroethene		127184	100.0	-	6.8E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Toluene		108883	2,800.0	-	2.7E+10	-	-	-	-	<5.0	5.3	-	-	-	-	-	-	-	-	-	-	-		
1,1,1,1-Trichloroethane		71556	4,000.0	-	6.7E+10	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
1,1,1,2-Trichloroethane		79005	100.0	-	2.5E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Trichloroethene		79016	100.0	-	2.3E+09	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Trichlorofluoromethane		75694	52,000.0	-	3.8E+12	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Vinyl Acetate		108054	13,000.0	-	1.3E+10	-	-	-	-	<10	<10	-	-	-	-	-	-	-	-	-	-	-		
Vinyl Chloride		75014	40.0	-	8.9E+08	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		
Total Xylene		1330207	700.0	-	2.9E+11	-	-	-	-	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-		



Plainwell Mill Banks - Soil Data

Investigation	RANGE OF POTENTIALLY APPLICABLE PART 201 CRITERIA				BBL 1996		BBL 1996 - Sediment		ERM Phase II		CDM Gray Seam	Plainwell Mill Bank Emergency Response Action												
Sampling Location					SPC-1	SPI-1	SPD-1	SPC-2	SBG-1A/B	SBG-1C/D	PM 8-1	PM-SD-035	PM-SD-036	PM-SD-037	PM-SD-038	PM-SD-039	PM-SD-040	PM-SD-041	PEX-1	PEX-2	PEX-3	PEX-4	PEX-5	
Sample Depth (ft)					0.0 - 0.50	3.0 - 3.5	Sediment	Sediment	0.0 - 4.0	4.0 - 8.0	0.3 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	
Collection Date																								
PAHs	CAS No.	ug/kg			ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	
Acenaphthene	83329	4,400.0	-	1.4E+10	-	-	-	-	<2,200	<110	-	-	-	-	-	-	-	-	-	-	-	-	-	
Acenaphthylene	208968	5,900.0	-	2.3E+09	-	-	-	-	<4,400	<220	-	-	-	-	-	-	-	-	-	-	-	-		
Anthracene	120127	41,000.0	-	6.7E+10	-	-	-	-	52	0.82	-	-	-	-	-	-	-	-	-	-	-	-		
Benzo(a)anthracene	56553	20,000.0	-	1.6E+05	-	-	-	-	230	1.6	-	-	-	-	-	-	-	-	-	-	-	-		
Benzo(a)pyrene	50328	2,000.0	-	1.9E+06	-	-	-	-	300	2.4	-	-	-	-	-	-	-	-	-	-	-	-		
Benzo(b)flouranthene	205992	20,000.0	-	1.6E+05	-	-	-	-	240	3.1	-	-	-	-	-	-	-	-	-	-	-	-		
Benzo(g,h,i)perylene	191242	2.5E+06	-	8.E+08	-	-	-	-	590	<2.2	-	-	-	-	-	-	-	-	-	-	-	-		
Benzo(k)flouranthene	207089	2.E+05	-	1.6E+06	-	-	-	-	140	<0.55	-	-	-	-	-	-	-	-	-	-	-	-		
Chrysene	218019	2.E+06	-	1.6E+07	-	-	-	-	480	3.1	-	-	-	-	-	-	-	-	-	-	-	-		
Dibenzo(a,h)anthracene	53703	2,000.0	-	16,000.0	-	-	-	-	73	3.6	-	-	-	-	-	-	-	-	-	-	-	-		
Flouranthene	206440	5,500.0	-	9.3E+09	-	-	-	-	<1,100	<55	-	-	-	-	-	-	-	-	-	-	-	-		
Flourene	86737	5,300.0	-	9.3E+09	-	-	-	-	<110	<5.5	-	-	-	-	-	-	-	-	-	-	-	-		
Indeno(1,2,3,c,d)pyrene	193395	20,000.0	-	1.6E+05	-	-	-	-	<440	<22	-	-	-	-	-	-	-	-	-	-	-	-		
1-Methyl Naphthalene	90120	Part 201 Not Applicable			-	-	-	-	<1,100	<55	-	-	-	-	-	-	-	-	-	-	-	-		
2-Methyl Naphthalene	91576	57,000.0	-	3.7E+07	-	-	-	-	<1,100	<55	-	-	-	-	-	-	-	-	-	-	-	-		
Naphthalene	91203	870.0	-	2.E+08	-	-	-	-	<110	<5.5	-	-	-	-	-	-	-	-	-	-	-	-		
Phenanthrene	85018	5,300.0	-	7.2E+06	-	-	-	-	370	9.5	-	-	-	-	-	-	-	-	-	-	-	-		
Pyrene	129000	4.8E+05	-	6.7E+09	-	-	-	-	500	<22	-	-	-	-	-	-	-	-	-	-	-	-		
PCB's	CAS No.	mg/kg			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Aroclor 1016	12674112	Part 201 Not Applicable			-	-	<0.4	<32	-	-	<0.0652	1.3 PD	13 D	2.8 PD	0.22 D	1.1 PD	8.3 D	20 D	<0.10	<0.10	<0.10	<0.10	<0.10	
Aroclor 1221	11104282	Part 201 Not Applicable			-	-	-	-	-	-	<0.0652	<0.21	<1.0	<1.2	<0.14	<0.17	<1.1	<16	57	<0.10	<0.10	<0.10	<0.10	
Aroclor 1232	11141165	Part 201 Not Applicable			-	-	-	-	-	-	<0.0652	<0.21	<1.0	<1.2	<0.14	<0.17	<1.1	<16	<0.10	<0.10	<0.10	<0.10	<0.10	
Aroclor 1242	53469219	Part 201 Not Applicable			-	-	<0.4	<32	-	-	<0.0652	<0.21	<1.0	<1.2	<0.14	<0.17	<1.1	<16	75	14	0.11	0.46	0.22	
Aroclor 1248	12672296	Part 201 Not Applicable			-	-	<0.4	240	-	-	<0.0652	2.6 D	7.0 PD	5.8 D	0.34 PD	0.44 PD	12 D	160 D	76	4.9	0.15	0.59	0.95	
Aroclor 1254	11097691	Part 201 Not Applicable			0.51	0.82	2.9	<32	-	-	0.113	2.8D	4.3 D	3.8 D	0.29 D	0.24 PD	7.0 D	310 D	65	3.7	<0.10	0.87	3.4	
Aroclor 1260	11096825	Part 201 Not Applicable			0.23	0.61	0.99	<32	-	-	<0.0652	0.34 D	<1.0	<1.2	<0.14	<0.17	<1.1	23 PD	15	0.98	<0.10	0.22	0.55	
Total PCB Conc.	-	4.0	-	2.8E+07	0.74	1.4	3.90	240.00	-	-	0.113	7.04	24.3	12.4	0.85	1.78	27.3	513	288	23.6	0.26	2.1	5.1	
PCDD/PCDF ITEQ`	-	9.00E-05	-	1.00E-03	-	-	5.6E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Metals	CAS No.	mg/kg			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Arsenic	7440382	4.6	-	2,000.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium	7440439	5.28	-	2.3E+05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chromium	16065831	1.5E+05	-	4.52E+06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Copper	7440508	112.84	-	1.E+06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lead	7439921	400.0	-	1.E+05	-	-	-	-	200	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mercury	7439976	5.00E-02	-	20,000.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Selenium	7782492	4.00E-01	-	1.3E+05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Zinc	7440666	2,400.0	-	1.E+06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

# Appendix D

## Historical Aerials

---





PROJECT: WEYERHAEUSER COMPANY  
PLAINWELL MILL - OU7  
PHASE 2 OF ADDENDUM #1 - APPENDIX D

SHEET TITLE:  
HISTORICAL AERIAL PHOTOGRAPHY 1955

DATE: JULY 2008

DRAWN BY: NCW

FIGURE 1

**RMT**



PROJECT: **WEYERHAEUSER COMPANY  
PLAINWELL MILL - OU7  
PHASE 2 OF ADDENDUM #1 - APPENDIX D**

SHEET TITLE: **HISTORICAL AERIAL PHOTOGRAPHY 1960**

DATE: JULY 2008

DRAWN BY: NCW

**FIGURE 2**

**RMT**





PROJECT: **WEYERHAEUSER COMPANY  
PLAINWELL MILL - OU7  
PHASE 2 OF ADDENDUM #1 - APPENDIX D**

SHEET TITLE: **HISTORICAL AERIAL PHOTOGRAPHY 1967**

DATE: JULY 2008

DRAWN BY: NCW

**FIGURE 3**

**RMT**





PROJECT: **WEYERHAEUSER COMPANY  
PLAINWELL MILL - OU7  
PHASE 2 OF ADDENDUM #1 - APPENDIX D**

SHEET TITLE: **HISTORICAL AERIAL PHOTOGRAPHY 1974**

DATE: JULY 2008

DRAWN BY: NCW

**FIGURE 4**

**RMT**



PROJECT: WEYERHAEUSER COMPANY  
PLAINWELL MILL - OU7  
PHASE 2 OF ADDENDUM #1 - APPENDIX D

SHEET TITLE:  
HISTORICAL AERIAL PHOTOGRAPHY 1980

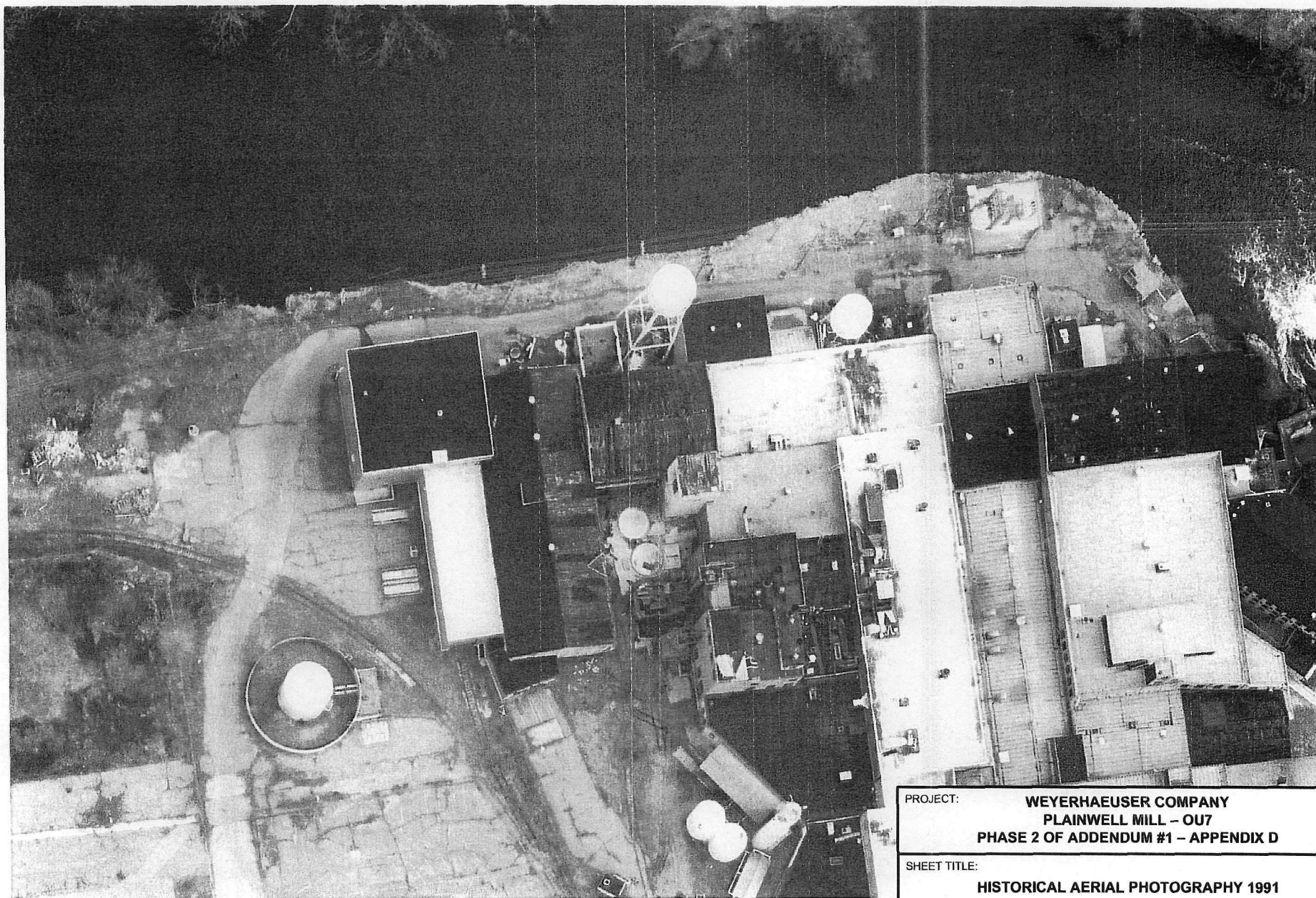
DATE: JULY 2008

DRAWN BY: NCW

FIGURE 5

**RMT**





PROJECT: WEYERHAEUSER COMPANY  
PLAINWELL MILL - OU7  
PHASE 2 OF ADDENDUM #1 - APPENDIX D

SHEET TITLE:  
HISTORICAL AERIAL PHOTOGRAPHY 1991

DATE: JULY 2008

DRAWN BY: NCW

FIGURE 6

RMT

# Appendix E

## Plainwell Mill - Manhole Photographic Log


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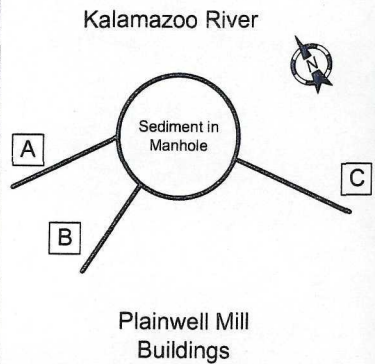
# Photographic Log

Client Name: Weyerhaeuser		Site Location: Plainwell Mill	Project No.: 00-05133.01
------------------------------	--	----------------------------------	-----------------------------

Photo No. 1	Date 5/29/08	
<b>Description</b> Photograph viewing inside the manhole looking towards the southwest.		



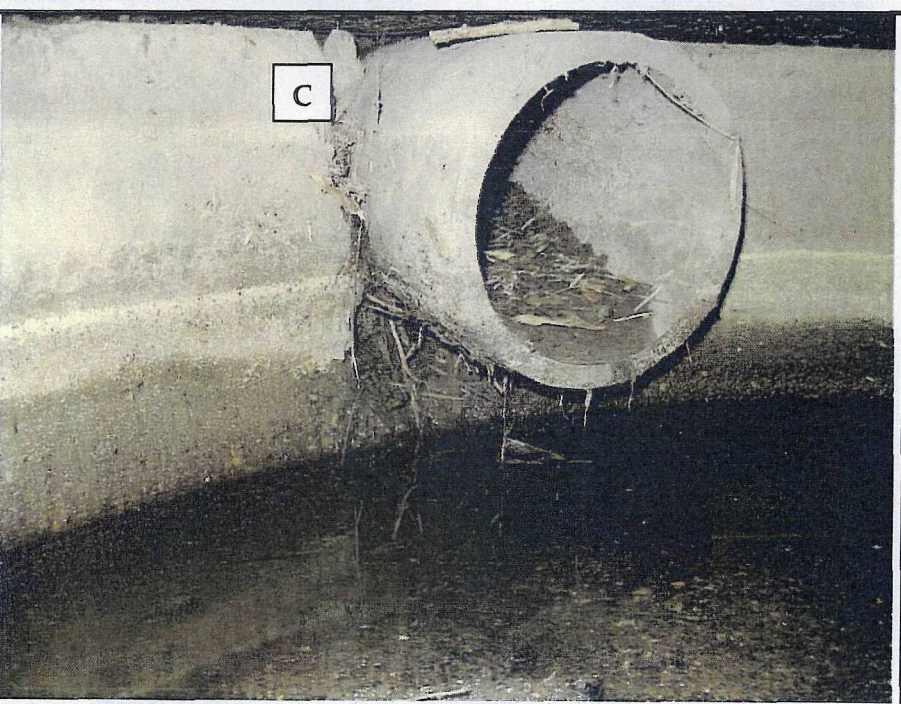
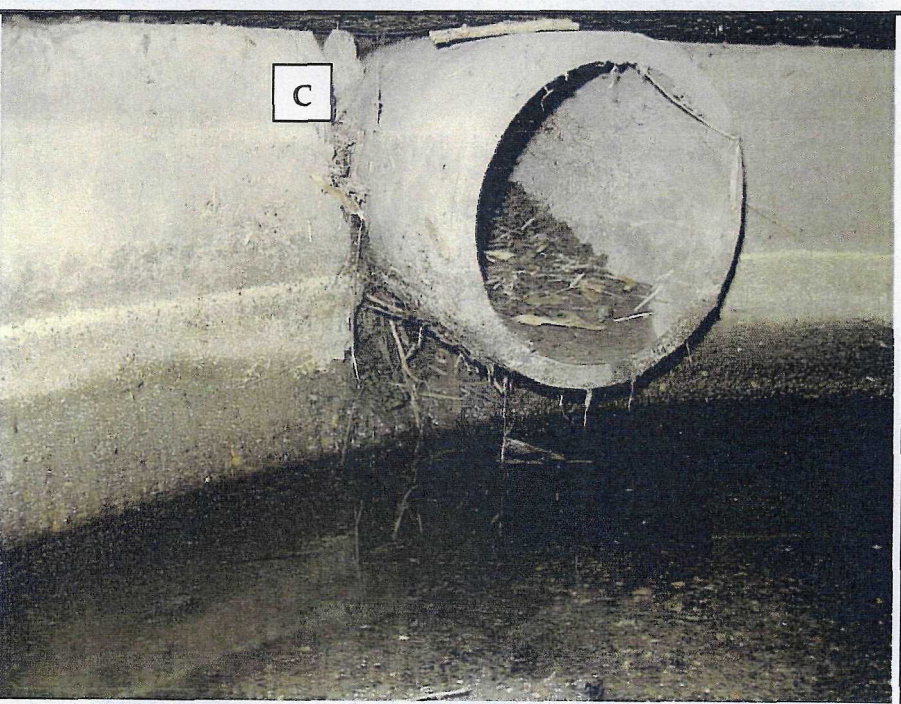
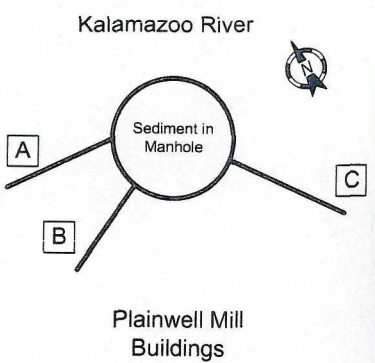
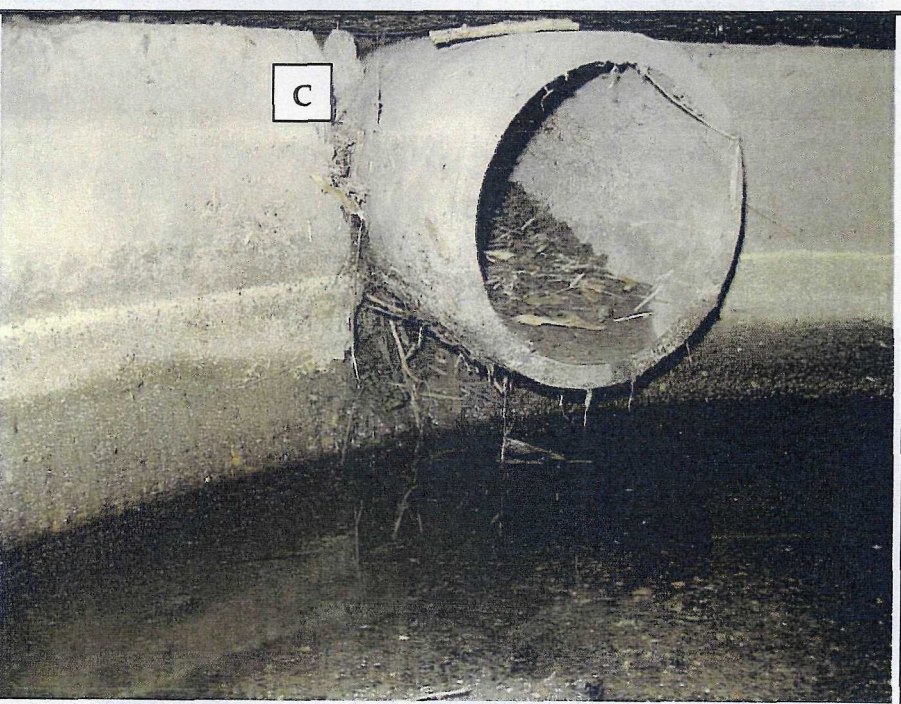


Photo No. 2	Date 5/29/08	
<b>Description</b> Photograph viewing inside the manhole looking towards the southeast.		





# Appendix F

## Historical Mill Drawings

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# SDMS US EPA Region V

## Imagery Insert Form

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